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Forty case studies made by research teams of independents or governmental agencies in Austria, Canada, France, Germany, Norway, Sweden, United Kingdom, and the United States were analyzed to provide managements and trade unions with illustrations of present systems of technical and manpower changes at the enterprise level and to describe the methods used. The material (1) draws upon a general body of literature dealing with the manpower aspects of technical change for comparison with the case studies, (2) analyzes the various types of economic change which confronted the firms and organizations, (3) studies the organizational forms of manpower planning and assesses their relevance to the problems which arose, (4) discusses the various adjustment procedures which were used, and (5) considers the role of worker consultation in manpower planning. It was concluded that procedures for coordination of technical change are possible without undue interference or costly adaptation programs and are necessary to prevent losses in production and overhead costs. The coordination should be organized in advance and on a long-term basis rather than improvised as the need arises. The appendix contains 29 case studies which are presented in "Technical Changes and Manpower Planning: Coordination at Enterprise Level." (VT 006 379). (HC)

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INDUSTRIAL RELATIONS ASPECTS OF
MANPOWER POLICY

VT007260

Dorothy Wedderburn

# enterprise planning for change

## CO-ORDINATION OF MANPOWER AND TECHNICAL PLANNING

**ORGANISATION FOR ECONOMIC
CO-OPERATION AND DEVELOPMENT**
PARIS 1968

This report, which has been approved for publication by the Manpower and Social Affairs Committee of OECD, is the fifth in the series "Industrial Relations Aspects of Manpower Policy". The previous publications in this series are:

> Office Automation: Administrative and Human Problems, by W.H. Scott.
>
> Workers' Attitudes to Technical Change, by Alain Touraine and Associates
> and Acceptance and Resistance: a résumé by the Secretariat of OECD.
>
> Redundancy Practices in Four Industries by A. D. Smith.
>
> Technical Change and Manpower Planning: Co-ordination at Enterprise Level. Case studies edited by Solomon Barkin.

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Dorothy Wedderburn

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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# 1 enterprise planning for change ;

## CO-ORDINATION OF MANPOWER AND TECHNICAL PLANNING, Add

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3 ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, Paris (France)

MANPOWER AND SOCIAL AFFAIRS DIRECTORATE
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*The legal personality possessed by the Organisation for European Economic Co-operation continues in the O.E.C.D. which came into being on 30th September 1961.*

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## Table of contents

Page

Foreword . . . . . . . . . . . . . . . . . . . . . . 9

Preface . . . . . . . . . . . . . . . . . . . . . . 13

Section 1: Manpower Planning and the Origins of this Study . . . . . . . . . . . . . . . . . . 15

General Manpower Policy - Full employment . . . . . . 15

The new factors - labour shortage, automation, and long-term economic planning . . . . . . . . . . . . . 17

The basis of the present report - the preparation of the OECD case studies . . . . . . . . . . . . . . . 19

What is meant by manpower planning at the enterprise level . . . . . . . . . . . . . . . . . . . . . . . 21

Section 2: Types and Causes of Change at the Enterprise Level . . . . . . . . . . . . . . . 23

The economic background to the case studies . . . . . 23

A preliminary classification of change . . . . . . . . 26

(i) Change in the nature of the product or the scale of output . . . . . . . . . . . . . . . 26

(ii) Change in the inputs of capital and labour . 27

(iii) Change in the administration of the inputs . 28

(iv) No examples of "pure" types of change . . . . 28

The background to change . . . . . . . . . . . . . . 30

Conclusion . . . . . . . . . . . . . . . . . . . . . 31

Page

Section 3: The Organisational Forms and Scope of Manpower Planning . . . . . . . . . . . . . . . . 33
Types of special planning organisations . . . . . . . 34
Change without special machinery . . . . . . . . . . . . 35
Factors influencing the establishment of special, or the use of existing, machinery . . . . . . . . . . . . 37
The role of external agents in planning . . . . . . . 38
Time taken to plan . . . . . . . . . . . . . . . . . . . . 38
The scope of manpower planning in the case studies . . 40
Conclusions . . . . . . . . . . . . . . . . . . . . . . 42

Section 4: Sources of Data and Methods Used in Estimating Manpower Adjustments . . . . . . . . 45
Problems of definition . . . . . . . . . . . . . . . . 45
Sources of information for constructing the manpower balance sheet . . . . . . . . . . . . . . . . . . . . 47
Conclusions . . . . . . . . . . . . . . . . . . . . . . 51

Section 5: Quantitative Aspects of Manpower Adjustments (i) A General Review . . . . . . . . . 53
Factors affecting the direction of change . . . . . . 55
Guarantees of no dismissals . . . . . . . . . . . . . . 57
Methods of expanding the labour force . . . . . . . . 58

Section 6: Quantitative Aspects of Manpower Adjustments (ii) Problems of Reduction . . . . . 61
Methods of reducing the labour force without dismissals 61
Handling dismissals . . . . . . . . . . . . . . . . . . 67
Conclusions . . . . . . . . . . . . . . . . . . . . . . 70

Section 7: The Qualitative Aspects of Manpower Adjustments - (i) Changes in job content; training and retraining . . . . . . . . . . . . . . . . 71
Changes in job content . . . . . . . . . . . . . . . . 71
The use of training and retraining . . . . . . . . . . 74
Methods of training . . . . . . . . . . . . . . . . . . 77
The older worker and change in job content . . . . . . 78

Section 8: Qualitative Aspects of Manpower Adjustments (ii) Wages and Salary Adjustment, Geographical Mobility, Shift Working . . . . . . . . 81
Consequential wage and salary adjustments . . . . . . 81
Geographical mobility . . . . . . . . . . . . . . . . . 85
Shift-working . . . . . . . . . . . . . . . . . . . . . 87
Conclusions . . . . . . . . . . . . . . . . . . . . . . 88

Page

Section 9: Workers' Attitudes to Change and the Role of Consultation . . . . . . . . . . . . . . . 89
Indications of opposition or acceptance of change . . 90
Information and consultation with the workers . . . . 92
The when, what and how of consultation . . . . . . . . 93
Negotiations with the workers . . . . . . . . . . . . 96
The contribution of worker consultation to the planning process . . . . . . . . . . . . . . . . . . . . . 98
Conclusions. . . . . . . . . . . . . . . . . . . . . 99

Section 10: Conclusions - Lessons for the Future . . . 101
How representative are the OECD case studies? . . . . 101
Does manpower planning vary according to the type of change? . . . . . . . . . . . . . . . . . . . . . . 102
Differences between countries . . . . . . . . . . . . 103
The importance of the general level of employment . . 103
The techniques of manpower planning - a continuous process . . . . . . . . . . . . . . . . . . . . . . 104
The organisational form of manpower planning . . . . . 106
Worker consultation as a part of manpower planning . . 106
Manpower planning at the enterprise and national level 108
Criteria of success for handling manpower planning and change . . . . . . . . . . . . . . . . . . . . . . 109

Index of references to OECD case studies 111

Bibliography 113

Appendix - Summaries of case studies

Austria 117
Canada 117
France 118
Federal Republic of Germany 121
Norway 124
Sweden 126
United Kingdom 131
United States 135

# Foreword

This, the fifth volume in the series "Industrial Relations Aspects of Manpower Policy", is an evaluation of case studies made in eight countries on experience with the coordination of technical change and manpower planning at the enterprise level. Its primary object is to discover what may be learned from an analysis of individual experience in these countries.

Manpower planning is not highly developed, nor is it widely employed within the enterprise. Managements have only recently begun to realize that it can profitably be integrated into the general process of planning within a firm. The abundance of labour and trained personnel on the labour market had previously obscured this need. Now, with the appearance of labour shortages, some of a transitional and some of a chronic character, with the need for adapting production programmes to available labour supply, and the increasing demand for specialized personnel not available in the market, managements have begun to acknowledge the necessity and profitableness of manpower planning. There are therefore a growing number of examples in modern industry of manpower planning and close co-operation and support between manpower and technical planning personnel and departments.

Manpower planning has been brought to the fore by major technical and economic changes which are trying the competence and preparedness of administrative organisations, testing the adequacy of present procedures, and the ability of managements to effect innovations without disrupting their relations with employees, depressing morale or depreciating their own "position" within the labour market. Moreover, as trade unions have gained more leverage within enterprises and the labour market, they have challenged abrupt, ad hoc and limited programmes for adjustment to technical change, particularly where they result in redundancies or have other adverse effects upon employees or disturb existing employee positions.

This project was conceived to supply the managements and trade unions of Member countries with illustrations of present systems of technical and manpower changes in enterprises and to describe the methods used. The case studies, forty in all, were made in individual countries usually by research teams of competent independent or governmental agencies. Twenty-nine of these studies have been presented in summary form in a separate volume(1). In the preface to the case studies for each country, the editor gives major findings and a short introduction concerning the principal characteristics of the cases.

This summary is of course limited to material contained in the reports and does not purport to consider all the interesting questions normally raised in a review of these problems. For example, it would have been interesting to consider the relationship between management structure and technical change, or the effects of the 'skill mix', but these were not central to the study. The primary emphasis is on the systems of coordination between technical and manpower planning and the procedures followed within the enterprise. The project guide directed the investigators to avoid detailed studies of the techniques of adjustment since these needed individual treatment and were being considered in separate studies.

Enterprise manpower planning is an important part of an active manpower policy, the long-term goal of which must be the integration of both public and enterprise policies and programmes into a single national system in order to assure the optimum productive utilisation of a nation's manpower resources. The inclusion of the enterprise in such national policies is imperative because most personnel adjustements to change occur there. A nation's success in meeting the problems of technical change depends considerably upon the effectiveness of enterprise efforts as well as, of course, on the ability to develop alternative employments and to expand demand to provide increasing numbers of new jobs. The public agencies and policies usually supplement and complement these enterprise programmes and take on the responsibilities which enterprises are unable to or do not perform adequately. The concept of such coordination has been labelled an "integrated national active manpower policy".

The present volume is, therefore, limited to the problems of the procedures of coordination within the enterprise and concludes that such coordination is possible usually without undue interference or costly adaptation programmes. In fact, without such coordination there may well be considerable losses in production and overhead costs because bottlenecks in the supply of manpower may appear or industrial disturbances cut down on output.

The second major conclusion is that coordination should be organised on a long-term basis rather than improvised as the need arises. Advance planning helps management to work out the principles and determine the useful tools ahead of actual need, and reduces bewilderment at the time of their application. Nevertheless, flexibility is necessary in their application to specific problems and during the course of the installations. There must be a variety of tools for use in each instance so that the most appropriate ones can be employed. Information needs to be regularly assembled to be available when needed.

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(1) "Technical change and Manpower planning" Coordination at Enterprise Level. Case studies edited by Solomon Barkin, OECD 1967

Consultation with and participation by employees in the process of adjustment to technical change are highly profitable and increase understanding, acceptance and often cooperation in effecting smoothly the ultimate programme.

Manpower planning for change is part of the whole process of management and the regular industrial relations system. The special tools and objectives developed should be integrated into the whole programme so that they are consistent with, interact and support one another. An expert and competent personnel is also desirable and can only be developed over time and with experience.

The goal of an active manpower policy is to advance the full productive utilisation of the human resources in an economy of continuing growth and rising living standards. It is important, therefore, that the active population should be willing to accept and support innovations which are intended to promote these goals. In many cases, however, they are seriously disrupting existing relations and menacing the security which people enjoy in current employments. Although to the outsider this may appear to be tenuous, people tend to feel safer with the known than with the unknown. Manpower programmes, both at enterprise and public levels, should therefore provide adjustment techniques and provisions for financial security to remove the personal costs, ease the transition and minimise the disruptive and pressing effects of these changes on the individual. In addition, it is expected that the increasing national economic wealth will bring improved living standards for the mass of people. Together these measures should help to build acceptance, if not support, for change.

The present series of cases and the report itself were presented in summary form by Mrs. Dorothy Wedderburn at the International Conference on "Methods of Adjustment of Workers to Technical Change at the Plant Level" held in Amsterdam, November 15th-18th. 1966. The individual studies in this series on the "Industrial Relations Aspects of Manpower Policy" were supplemented by additional case studies and reviews to provide an even wider basis for evaluating this problem. These case studies provided illustrations of the effects of the absence of planning and of efforts to avoid manpower problems by sub-contracting, the deliberate adjustment of technical changes to manpower factors and finally a carefully developed long-term programme of scheduling redundancies. The authors of the Norwegian and Swedish reports presented detailed conclusions on the types of administrative procedure which could be most useful. Finally, two papers offered models or systems of diagnosis and implementation which sought to integrate the major lessons so far learned on coordination and planning.

This Conference also considered separately the individual techniques for adjustment and the methods of coordinating public and enterprise manpower programmes. A follow-up study is being made on the latter.

The OECD is greatly indebted to Mrs. Dorothy Wedderburn for the preparation of this integrated report. Our gratitude is also extended to John Goldthorpe of Cambridge University and Arnold Weber of the University of Chicago for kindly reading the original case studies and making many important contributions to the preparation of the original outlines of this integrated report.

A separate short summary for each of the 29 case studies is added as an appendix to aid in the reading of the present text.

# Preface

The Organisation for Economic Co-operation and Development, through its Manpower and Social Affairs Committee, has initiated a broad programme of study concerned with the manpower aspects of change in industry. It has approached this question along a number of different routes, as can be seen from the titles of the three studies already published; "Office Automation: Administrative and Human Problems"; "Workers' Attitudes to Technical Change", and "Redundancy Practices in Four Industries". One method was to commission a series of case studies from eight of the member countries of O.E.C.D. These case studies were chosen to provide examples of the concurrent programming of technical change and the consequent manpower adjustments at the level of the industrial enterprise or organisation. Twenty-nine of these case studies, which relate to changes taking place at different times over the last ten years, have been published in one volume.

The present report is a commentary upon these case studies, and an attempt to relate the experiences of the individual organisations to some of the general social and economic factors which influenced their handling of the change situation. It does not contain any new field work, but draws upon some of the general body of literature dealing with the manpower aspects of technical change to provide background material, and to compare and contrast with the case studies. It analyses the various types of economic change which confronted the firms and organisations, and the relationship between the type of change and the kind of manpower adjustments which were required. It studies the organisational forms of manpower planning and assesses their relevance to the problems which arose. It discusses the various adjustment procedures which were used, such as retraining, measures to facilitate geographical mobility, etc., as well as the measures used to minimise the impact of dismissal upon workers when it proved necessary to reduce the labour force. It considers the role of worker consultation in such manpower planning and finally attempts to draw some general lessons.

Dorothy Wedderburn

## Section 1

## MANPOWER PLANNING AND THE ORIGINS OF THIS STUDY

This study has its origins in the policy of OECD to encourage the development, at industry and firm level, of a conscious manpower policy to supplement and parallel government developments in the same field.

### General Manpower Policy - Full employment

At Government level the post-war period has seen a considerable growth of interest in manpower planning policies both in the United States and in Western Europe. This has primarily been in the context of the pursuit of policies to maintain full employment:-

> "If there is any common background for the programme for the active manpower policy it is the acceptance of a policy of full employment by the nations of the world"(1).

This acceptance has meant in the first place activity on two levels. On the one hand, at the macro-economic level, techniques have been developed to maintain a high level of effective demand. On the other hand, policies have been extended to minimise the impact of unemployment upon the individual worker, to reduce hardship and to help him into a new job as quickly as possible.

Many of these latter policies have, of course, a long history. Employment agencies organised by the government, developed in some European countries as early as the beginning of this century. Government organised or inspired unemployment insurance to provide an income for the individual when without work began for instance, in the United Kingdom in 1911, in Germany in 1927, and in the United States in 1935, although the form and the extent of coverage of these schemes differed at their inception as it still does today. In some countries there is a history of government intervention in other areas for the protection of the worker's employment position. In Germany employers have long had a duty to give minimum periods of notice in case of dismissal; in other countries governments have legislated certain principles to be applied in the selection of workers who are to be dismissed(1).

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(1) S. Barkin "The Evolution of the Concept of an Active Manpower Policy" in International Trade Union Seminar on Active Manpower Policy - Final report, OECD Paris 1964, p. 46

But in a number of countries recently, there has been a renewed interest in the extension and amendment of these policies and a new look has been taken at the problems they were designed to solve. This has sometimes, but not always, resulted from spontaneous government initiative. A key factor has been the changed bargaining position of labour which has, on the one hand, made trade unions more concerned to bargain, or to press for legislation, covering such matters as financial compensation for dismissal, length of notice, etc., and, on the other hand, made employers more willing to meet such demands or to join with the unions in pressing action upon government. Together these forces have produced interesting, although differing developments much moulded by the traditions of the countries concerned.

For instance, a shift in attitudes on the part of management and workers towards the incorporation of clauses covering advance notice of dismissals in the collective bargain, has been noted in the United States. In that country severance pay provisions are now found in approximately 30 per cent of the collective bargaining agreements and in the seven years, 1956 to 1963, the percentage of such clauses nearly doubled(2). In Sweden, where provision for advance notice of dismissal has for long been covered by agreement between the trade unions and employers, a new step was taken in 1964 when financial compensation for redundancy was for the first time introduced. In the United Kingdom, on the other hand collective bargaining on these matters has been negligible. But the last three years have seen two major pieces of legislation which represent a completely new departure. They initiate government intervention in a new area. The first, the Contracts of Employment Act 1963, laid down minimum periods of notice, based on length of service, which have to be given by employers to workers to be dismissed. The second, the Redundancy Payments Act 1965, imposed a duty on all employers to make lump sum payments to most categories of workers dismissed as a result of redundancy.

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(1) See Labour Law in Europe. British Institute of International and Comparative Law Supplement to International and Comparative Law Quarterly No. 5 1962

(2) A.R. Weber. "Variety in Adaptation to Technological Change; the contribution of Collective Bargaining" in The Requirements of Automated Jobs, Final report OECD Paris 1965, pp 209,224.

## The new factors - labour shortage, automation, and long-term economic planning

This is a developing situation and it is important to identify the factors which have made their contribution to it. First, the very success of policies to maintain full employment has produced a new problem in many Western European countries - the problem of labour scarcity(1). In the last few years, discussions of economic policy in France, West Germany, Sweden and Britain, for instance, have been increasingly concerned with the difficulties created by an inadequate supply of labour. The concept of manpower planning has inexorably developed and been extended to include measures necessary to obtain the best utilisation of the existing labour force, or, in other words, it has been concerned with formulation of a strategy to make the most efficient use of a scarce resource. Increased emphasis has been placed upon the role of national manpower planning bodies where they already existed, and others have been established(2).

A second major factor has been increasing awareness of the possibilities and problems of an accelerating rate of technical change and in particular the impact of automation. The precise emphasis placed upon the manpower consequences of automation has varied according to the national context. In the United States, until recently, the framework was provided by the relatively high level of unemployment. Indeed the view that automation was, to a large extent, a cause of that unemployment was widely held. The recent report to the President from the National Commission on Technology, Automation and Economic Progress has, however, produced a powerful attack on such an interpretation of the country's economic problems, both in the past and in the future, concluding:-

> "If unemployment does creep upward in the future
> it will be the fault of public policy, not
> the fault of technological change"(3).

In Europe, where the extent of automation is still relatively limited compared with the United States, it has been seen more often as a potential solution to labour shortages, although even here, there has been much conern with the problems of how the labour, which will be displaced by technical advance, can be reabsorbed into new employment.

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(1) For instance between 1960-65 unemployment rates in Sweden and the United Kingdom fluctuated between 1 per cent and 2 per cent of the active population; in France just over, and in West Germany just below 1 per cent. In the United States, on the other hand, they have, in the same period, been as high as 6.5 per cent, although more recently, they have fallen to 4 per cent.

(2) For a useful review of the manpower forecasting techniques used by the bodies in various countries see Employment Forecasting: International Seminar on Employment Forecasting Techniques. OECD Paris 1963 and J.R. Crossley "Forecasting Manpower Demand and Supply" in ed. B.C. Roberts and J.H. Smith Manpower Policy and Employment Trends G. Bell and Sons, Ltd. London 1966.

(3) Technology and the American Economy - Report of the National commission on Technology, Automation and Economic Progress. Volume I p.27 U.S. Government Printing Office, Washington 1966

These new factors, labour shortage and automation, have not only reinforced the tendencies, already noted, towards the development of Government techniques for manpower planning and policies for adjustment, but they have also begun to have a forceful impact upon the individual enterprise and its attitude towards its own manpower policies. In turn this has coincided with, and in fact developed from, the increasing practice of long-term economic planning within the large corporations. At the most unsophisticated level this so-called planning may amount to little more than forecasting what is likely to happen. But this develops into something more purposive when as one corporation expressed it:-

> "Our planning process aims to develop a course of action which American Airlines will attempt to make happen, not to ask what will happen ......".(1)

As Shonfield notes, this kind of planning at the enterprise level probably originated in the United States, where Government planning is at a minimum. He further comments:-

> "It is the shift from the conventional financial framework for analysing a company's policy and operations to their analysis in terms of the flow of physical resources - raw materials, equipment, buildings, manpower - which the large organisations tend to see as the most significant of their new techniques"(2).

In Europe, too, long-term planning by the large corporations has begun to take hold. In France, the operation of the National Plan itself positively encourages and builds on such activity by the enterprise and this, too is the trend in the United Kingdom(3).

It appears, however, that of all the physical resources manpower has been the one which has received least attention where business planning does occur; and of course, business planning is not universal, nor always very sophisticated. In particular, there has been little evidence of much attempt to co-ordinate nationally developed manpower policies with the policies of the individual enterprise. In order, therefore, to encourage developments at the enterprise level the Manpower and Social Affairs Committee of the OECD declared their conviction "that employers and their organisations can take part in an active manpower policy by applying the essential principles of adjustment in their personal industrial relations programme on a plant, establishment and industry basis. Such policies will help to unify private and public policy and stimulate co-operative relations between labour, management and government"(1).

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(1) Quoted in A. Shonfield. Modern Capitalism p. 349 Royal Institute of International Affairs, Oxford University Press, London 1965.

(2) A. Shonfield 1965 op cit. p.349

(3) See the description of the Industrial Inquiry in The National Plan H.M.S.O. London 1965.

## The basis of the present report - the preparation of the OECD case studies

Some sociological and economic studies of the process of change at the industry or enterprise level have already been published which shed light on the problems of manpower adjustment(2). The present report makes full use of the background supplied by such studies. But it is mainly centred around an analysis of a series of case studies which were specially commissioned by the OECD. These were chosen to provide examples of the concurrent programming of technical change and the consequent manpower adjustments.

Eight countries - the United States, Canada, United Kingdom, France, West Germany, Austria, Sweden and Norway - co-operated with the OECD, and supplied a number of reports from which 29 case studies were eventually selected. The governments of the countries concerned were responsible for the production of the individual reports. But the methods they used varied. Some countries commissioned outside bodies, such as industrial consultants or independent research organisations; in others the case studies were produced by government departments themselves, sometimes in conjunction with outside bodies. Each country, was, however free, in co-operation with the OECD Social Affairs Division, to select its own case studies within the general terms of reference. There is no means of judging how representative of the situation in each country are those finally selected. Indeed, the main emphasis was upon the need to cover a wide variety of types of change, industry and firms.

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(1) S. Barkin. "Programming Technical Change and Manpower Adjustment", paper read to Conference on Employment Problems of Automation organised by International Institute for Labor Studies. July, 1964.

(2) the following are only a selection:-

Richard A. Beaumont and Roy B. Helfgott. Management Automation and People. Industrial Relations Counselors. New York 1964.

Floyd C. Mann and L. Richard Hoffman. Automation and the Worker. Henry Holt and Co., New York 1960.

W.H. Scott, A.H. Halsey, J.A. Banks, T. Lupton. Technical Change and Industrial Relations. Liverpool University Press, Liverpool 1960.

P. Lesley Cook. Railway Workshops - the Problem of Contraction. Cambridge University Press, Cambridge 1964.

D. Wedderburn. Redundancy and the Railwaymen. Cambridge University Press, Cambridge 1965.

H. Kahn. Repercussions of Redundancy. George Allen and Unwin, London 1964.

George P. Shultz and Arnold R. Weber. Strategies for the Displaced Worker. Harper and Row, New York and London, 1966.

J. Dofny, C. Durand, J.D. Reynaud et Alain Touraine. Les Ouvriers et le Progrès technique. Librairie Armand Colin, Paris 1966.

A general outline of the main areas of interest to be dealt with in the study was supplied by OECD after approval by a co-ordinating committee of representatives of the participating countries. There is a certain common approach, therefore, wich runs through all the reports. Emphasis has been placed upon the techniques and procedures used by the enterprise in dealing with its manpower adjustments, and in co-ordinating these with the schedules of technical change itself. The resulting reports are primarily descriptive rather than analytical, however. Moreover, the diversity of organisations preparing the reports is reflected in turn, in the variety of emphasis which is placed on various aspects of the case studies. The case studies should, therefore, be seen as representing examples of a broad range of experience which can be related to the body of existing information about the problems and scope of manpower planning, rather than as a representative sample from which concrete generalisations can be made.

The differences in the social and legal framework of the various countries in which the case studies are set, must be borne in mind. This aspect will be discussed more fully later in this report, particularly in relation to the problem of employee consultation(1). Suffice to note at this stage, however, that in this area, we move from the legally regulated West German setting, with its practice of co-determination in the iron, steel and coal industry, and with worker representation on the Board of Directors of public companies, to the United States setting, where the practice of negotiation and consultation depends upon the strength of the trade unions and the quality of industrial relations within the individual enterprise.

This report must also be seen in its setting as part of the total programme of the OECD Manpower and Social Affairs Directorate. Separate reports are, or will be, available reviewing the specific techniques of manpower adjustment available in a number of countries; the human problems of office automation on a cross national basis; the experience of manpower adjustments in certain specific industries subject to structural change; and generally the problems of workers' attitudes to technical change(2). These general reports all provide essential background material against which the experiences at the enterprise level, discussed in the present document should be considered. Their existence also explains why some of these important matters are discussed here so briefly.

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(1) See below section 9.

(2) W.H. Scott. Office Automation: Administrative and Human problems. OECD Paris 1965.

A. Touraine et al. Workers Attitudes to Technical Change. OECD Paris 1965.

A.D. Smith. Redundancy Practices in Four industries OECD Paris 1967.

## What is meant by manpower planning at the enterprise level

At this point it is necessary to define more precisely what is meant by manpower planning at the enterprise level, for the phrase is commonly used in a variety of ways. At the simplest level, manpower planning may refer only to the systematic study of manning requirements of a given production system. On the other hand, it can mean forecasting labour requirements for a future period. There are degrees of sophistication in such forecasting which vary for instance with the period for which the forecast is made; with the extent to which the estimates of labour requirements are based upon firm and reliable estimates of likely technical changes in the future; or the degree of breakdown of such estimates to show requirements by types and categories of labour; or the extent to which the forecasts are concerned not only with the demand side, but also with relating them to the supply side of the picture.

In the present study, the forecasting of labour requirements in response to the given change situation, is regarded as the first step in the process of manpower planning. The questions asked include what data were collected; what forecasting methods were used? But we shall also be concerned with the process by which the supply and demand sides of the labour balance sheet are brought into agreement. We shall consider the range of adjustment procedures available to the enterprise both internally and externally, the way in which these procedures are assessed and the considerations which dictate the final choice of particular procedures. We shall be concerned with the organisational forms, existing or newly developed, which are used to reach the decisions involved in the manpower planning process.

In doing this the report will first consider the variety of change situations with which the enterprise can be faced and the extent to which it is possible to classify different types of change in a way which has relevance to particular problems of manpower adjustment associated with particular types of change. Then it will turn to a review of the organisational forms of manpower planning and to consider whether particular forms are associated with particular types of change or with particular structures of the enterprise. Next we shall consider the quantitative, then the qualitative, aspects of manpower planning, (qualitative here means changes in job content, etc.) and the particular adjustment procedures - retraining, measures to facilitate geographical mobility, etc., available to assist with the quantitative and qualitative changes. Then we shall consider the role of worker consultation in the manpower planning process and the consequences of change for industrial relations and for the organisation generally. Finally, we shall attempt to draw some general lessons for the future.

## Section 2

## TYPES AND CAUSES OF CHANGE AT THE ENTERPRISE LEVEL

### The Economic background to the case studies

The purpose of this section is to examine the nature and type of changes which can affect the individual enterprise and which will also have considerable manpower implications. We shall attempt a preliminary classification of the main types of change encountered among the case studies with a view to producing ultimately a more general typology to assist in identifying those variables of key importance in the planning process. But in order to understand the complexity of the concept of "change" it is helpful first to review the general economic framework of the period during which the events described in these studies were occurring.

Although there have been important differences during the last ten to fifteen years in the economic experience of the countries under review in this report, one common trend stands out. By their own past standards their growth rate has been high. As one commentator has summarised it:-

> "By historic standards the productivity increase achieved during the 1950's as a whole - an average for the twelve countries of 3.5 per cent a year - was quite exceptional; twice as much as the average for the whole of the period beginning just before the First World War in 1913, until the conclusion of the main reconstruction phase after the second world war in 1950"(1).

Such an experience of economic growth might, of itself, lead us to expect a considerable amount of change, as a consequence, at the individual enterprise level. But how important in this growth has been technological change?

It is not the purpose of this report to enter the complex and difficult debate about the causes and mechanism of economic growth(1). We can note, however, that difficult as it is to arrive at any very satisfactory measure of technological change or precise definition of its function in a model of economic growth, most discussions of the subject do now suggest that there has been some acceleration of technical advance in recent years, both in North America and Western Europe. It is suggested that this is compounded of a reduction of the time span between the discovery of an innovation and its application, and in the speeding up of the diffusion of the application throughout the economy(2). Clearly technical innovation which will affect the development of new products, and the method of producing old ones will be one of the main factors affecting the demand for, and utilisation of, manpower by the enterprise. However, there are strong arguments for not confining our present study of change to technological change, in this sense, alone.

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(1) A. Shonfield 1965 op.cit., p.4, The twelve countries to which Shonfield refers are the United States, United Kingdom, Germany, France, Italy, Sweden, Norway, Denmark, Belgium, Holland, Switzerland, Canada.

The first practical objection is a purely definitional one. There have been many attempts to arrive at a reasonable working definition of technological change. The following definition was used in a recent North American study of manpower planning:-

> "the introduction of new or substantially different techniques and equipment involving a sizeable financial investment for use in the main or closely-related operations of a company, plant or facility and designed to yield a substantial increase in output per man hour worked. Such change would encompass what is commonly referred to as "automation", as well as other innovations having pronounced impact"(3).

But this paragraph illustrates well the ambiguities which can arise. What is a "sizeable financial investment" and what are "new and substantially different techniques"? But more important than these definitional problems is the fact that changes in the organisation of the process of production or in its administration can also have important manpower repercussions without any investment being involved. An interesting and concrete illustration of this point is provided by a recent grievance arbitration decision involving the United States Communication Workers' contract with the American Cable and Radio Corporation. The contract provided for the use of an attrition clause to protect workers' jobs in the case of changes due to "automation" or "mechanization". The dispute concerned a particular change involving the re-routing of messages, with the result that twenty-two workers in one particular location were declared redundant. The arbitrator in the case ruled that rerouting did not constitute a change due to automation or mechanisation and, hence that the attrition clause did not apply(1). This might be regarded as an organisational change. But over and above this, straight forward change in the scale of production, either contraction or expansion may also have manpower consequences.

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(1) For a recent interesting discussion of the role of technical change see C. Freeman, "Research, Technical Change and Manpower Forecasting" in ed. B.C. Roberts and J.H. Smith, 1966 op. cit.

(2) Technology and the American Economy 1966 op. cit. p. 2 . A. Shonfield, 1965 op. cit., p. 40 . S. Wolfbein "The Pace of Technological Change and the Factors Affecting it" in The Requirements of Automated Jobs. 1964 op. cit. p. 49-69

(3) R. Beaumont and R. Helfgott, 1964 op. cit. p. 12

Just as there is now a considerable measure of agreement that in social and economic terms it may be difficult to draw a hard and fast line between automation on the one hand, and advanced mechanisation on the other, so it is also impossible to draw a hard and fast line between different types of economic change some of which will have manpower repercussions and others of which will not. One interesting classification system has proposed that changes in economic activity should be viewed as a series of concentric circles.

The outer circle represents all forms of economic change affected by:

> - changes in the availability of resources, changes in trading boundaries, the development of new and substitute products, changes in the "mix" of resources used in production, or changes in managerial efficiency. Contained within this circle is technological change, defined as inventive activity, such as the use of pure oxygen in steel making. It represents, in effect, changes in those capital forms through which economic resources are transformed, into goods and services. Within the circle of technology is the circle of mechanisation... Automation is represented as the core circle... (2).-

Manpower adjustment problems at the enterprise level may then be seen as arising from the initiation of movement in any one of these circles and any consequent movement in the others. The need for manpower planning will certainly not be confined only to movements in the circle of technology and even less, only to movements in the core circle of automation.

The OECD case studies clearly illustrate the importance of this thesis. They range from studies of the effect of the introduction of computers into offices to studies of strictly organisational change in the machinery of administration; from studies of the manpower consequences of developing completely new techniques in virtually new industries, like atomic energy, to the consequences of fashion changes in the clothing industry. They are also diverse in two other dimensions. First they range from a study of problems where whole industries are affected to the problems of relatively small firms. The contraction of the old basic industries like coal and the railways, is a familiar story in many Western European countries as well as the United States. These problems of structural change are represented among the case studies. At the same time there are case studies dealing with the manpower adjustments of firms employing only a few hundred workers who may be introducing new techniques or adjusting to a reduced demand for their individual products. The second dimension of diversity is that the case studies embrace examples of change which is completely new, at least in the country in which the firm is situated, as well as examples of types of change for which considerable experience was already available.

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(1) "Protecting Job Rights through Attrition Clauses". A.F.L. - C.I.O. American Federationist June 1965

(2) Charles Killingworth - Nations Manpower Revolution quoted in Paul E. Sultan and Paul Prasow, "Automation: Some Classification and Measurement Problems" in Labour and Automation Bulletin No. 1, I.L.O. Geneva 1964, p.16

## A preliminary classification of change

To handle such diversity some sort of classification is desirable to provide a framework for the analysis of the case studies. Since we are concerned with change at the enterprise level, let us take as our starting point the enterprise as an organisation existing to combine inputs of capital and labour, to produce and market (or provide) goods or services. Change in the functioning of this organisation can then be analysed from three points of view. First there can be change in the output, that is change in the kind of product produced or in the scale of production. Second there can be change in the quantity and composition of inputs of capital and labour. Third there can be change in the way in which these inputs of capital and labour are combined, that is in the administration of the inputs. As we shall see none of these types of change are mutually exclusive. But for the moment we are concerned with classification of what may be called the initial or principal characteristics of change.

### (i) Change in the nature of the product or the scale of output

There are many examples among the case studies of change in the nature of the product. A French case-study describes a clothing factory manufacturing hosiery and knitwear where product changes were introduced in response to fashion changes. One example was a switch from seamed to seamless stockings. A German case study concerns the decision of a steel firm to diversify output, particularly in the direction of finished products, because of the wide fluctuation in demand for its basic product, which was half-finished plate. A Swedish case-study describes the building of a factory to manufacture high quality paper containers to meet increasing demand for superior packaging materials. A British company manufacturing rubber-hoses was involved in extensive rebuilding and re-equipping when it decided to undertake the manufacture of pipes of larger diameter than hitherto, in order to meet the demand arising from new methods of tanker loading and unloading. Another French case-study describes the problems encountered in setting-up and manning a completely new process, called leak-tightness inspection, at an atomic energy plant. To quote the report: "Vacuum work is highly specialised and in this case a very specific type of leak-tightness was being dealt with; in fact the methods employed in the Pierrelatte closed system will show up a loss of one cubic centimetre of gas in 3,000 years".

Changes in the scale of output can involve either expansion or contraction. The case-studies contain examples of both. Some of the most dramatic changes of scale arise from structural change where the demand for a particular product or service is permanently reduced in the economy as a whole, as a result of the development of preferred alternatives. The effects of one such example of structural change are described in a British case-study dealing with the experience of the coal-industry in the post-war period.

(ii) Change in the inputs of capital and labour

The second type of change which we have distinguished is that which involves change in the mixture of inputs of capital and labour, or more particularly in the form of capital inputs. This is the type of change commonly referred to as technological change. The OECD case-studies include many examples of what is loosely called "increased mechanisation". But in view of some of the origins of interest in manpower planning we might have expected also to find many examples of automation and its manpower consequences(1).

This is not, however, the case. If we define automation as self-regulation of the mechanical process there are in fact very few of such examples. One is supplied by the United Kingdom and concerns a steel company which installed four computers, one of which was for production control with linked automatic programming equipment to control operations in the bloom mill. The second study comes from the United States where among other uses of computer controls, an oil refinery installed a digital electronic system to control and optimise the facilities for blending gasoline and to control the octane number in a catalytic process reforming naptha.

Before we decide that automation, as a cause of change, appears unimportant from these case studies, it must be pointed out that they do include no less than five examples of office automation. These were drawn from five different countries, Sweden, Canada, United Kingdom, Germany and the United States. They covered the introduction of automatic data processing equipment in both private companies, such as an insurance company and the accounts department of an engineering firm, as well as into government departments like the United States Federal Government Internal Revenue Service.

Among the case studies, it is also possible to find examples on the border line of automation and advanced mechanisation. Such are the case studies describing the conversion from manual to automatic dialling in the Swedish and United States telephone systems. Another is a Swedish Steel company which installed many semi-automatic controls in a new rolling mill, so that work was co-ordinated by means of telephone, electronic control board and industrial television. In fact greater use of instrumentation, and hence of automatic or semi-automatic control, in the process industries, was a recurrent theme in many of the case-studies.

Increased use of mechanical handling equipment and aids was another feature of increased mechanisation in a wide range of industries, from hose-pipe manufacture in Britain to the distribution of liquified gas in France. Many of the straightforward cases of increased mechanisation like these, involved the adoption of techniques which had been widespread for many years. There was, for instance, little that was technically advanced in the substitution of ring for mule spinning in a Lancashire textile mill, nor even in the process used in a reorganised German engineering firm.

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(1) See above section p.17

Other case-studies, however, described technological change which was still relatively new, at least at the time it was being introduced. The British steel company already referred to above, adopted an oxygen steel making process (the Kaldo system) from Sweden, which had never before been used in the United Kingdom. A German paper-making company introduced a width of paper machine which was also completely new to that country.

### (iii) Change in the administration of the inputs

The third type of change to be distinguished is that which occurs in the actual organisation of the combination of inputs of capital and labour. It is characterised by change in the formal structure of the enterprise or undertaking. The OECD case studies include two major examples of such administrative change. The first describes the complete reorganisation of the Norwegian customs service. The number of customs posts were reduced, the division of the service into administrative districts was changed and, so too, was the system of customs declaration. The second describes the administrative reorganisation of the Swedish railways, of which the main feature was the substitution of units differentiated on functional grounds for those differentiated on geographical and hierarchical grounds.

Decision to concentrate output of a particular product, hitherto manufactured in two locations, in one factory and the consequent geographical and administrative changes which occurred are the subject of two other Norwegian case studies, which can also be described as organisational. Concentration of production following a take-over was a characteristic of the change involved in a case study of an iron foundry in Austria, and of an engineering firm in Germany.

But administrative change, as we have chosen to call it, is the least well documented type of change. Frequently reference is made in the case-studies to "modernisation". Often this seems to imply not only the introduction of new technology, but a general overhaul of lay-out and administration, yet few details are given. This however, lends support to the view that there are few examples where one of our types of change alone is involved.

### (iv) No examples of "pure" types of change

In fact although it is useful to distinguish these three broad types of change for classificatory purposes, the case studies do illustrate very clearly that there are very few occasions in real life where one type of change occurs alone.

Changes in the type of product or in the objective of the undertaking are very likely to affect the technique of production and vice versa. The switch from seamed to seamless stockings occurs in response to market changes, but involves the use of different kinds of machines. Technical developments in the manufacture of hosepipes made possible the production of pipes of a larger diameter than hitherto, but these were in any case required by developments in the markets served. The extension of the range of products in the German rolling mill resulted in the building of three new mills in which were employed more highly mechanised techniques of production, including measures of automatic control.

Changes in the scale of production both upward and downward are frequently accompanied by changes in methods of production. An expansion of output justifies or stimulates the adoption of new techniques which form part of what the enterprise may call a "modernisation programme". At the same time, contraction of demand for the final product very often occurs when new techniques of production are becoming available, so that the ultimate reduction of demand for labour in the firm or industry is intensified. Indeed, the pressure to remain competitive with other products or firms may induce the early adoption of newer technical methods. This has been the case in the British coal industry. There has been a long term trend towards the substitution of other fuels for coal, at the same time as there has been a marked increase in the amount of automatic cutting and loading of coal. A similar situation has prevailed both in the operation of the railways and in the building of railway equipment in the workshops. The replacement of steam by diesel locomotives and of wooden wagons by steel wagons, both of which require less maintenance, has coincided with a falling off in the demand for new engines and wagons because of reduced rail traffic. Moreover diesel locomotives require less manpower to operate them(1).

Changes in the inputs of capital and labour - technical change - will almost certainly be accompanied by some organisational changes. This was certainly the experience in all the case studies of automatic data processing. When the United States Internal Revenue service transferred its operations in the Atlanta region to a computer, the number of jobs in the region, taken as a whole increased, but the increase was centred in the Atlanta Service Centre and 500 jobs in outlying district offices were eliminated. Change in the relative size and importance of different departments occurred when the German pension department automated. Frequently, the absorption and definition of responsibilities of the new computer centres themselves pose particular problems requiring administrative reorganisation(2).

But lower levels of mechanisation also bring with them administrative changes. The case study concerned with the distribution of liquid gas shows how the decision to modernise the filling of the liquid gas containers and to mechanise the handling of the bottles went hand in hand with a policy for decentralisation of the filling stations in order to reduce transport costs. Similarly the building of a new shipyard in Sweden involved not only a new geographical location and the installation of highly mechanised handling and lifting equipment, but also the adoption of a completely new system of straight line production, using the flow principle.

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(1) See for a discussion of the workshop problem in Britain D. Wedderburn 1965 op. cit; and for the discussion of the diesel fireman dispute in the U.S. see "Arbitration Board's Award in Railroad Dispute" Monthly Labor Review, Jan. 1964, p.36-43 and Georges Dunard "Technical Progress and Job Security in the U.S. Railroads", International Labour Review, May 1964.

(2) See also the discussion in W.H. Scott 1965 op. cit., p.89 ff.

## The background to change

The system of classification of change so far discussed, is one internal to the enterprise. But the individual enterprise is also operating in an economic environment which provides stimuli which in their turn produce change. This is clear from the examples already given where the type of change was linked with its causation. For instance seamless stockings were produced as a result of fashion change; a new paper container factory was built because of increased demand for high quality packaging materials. The definition and identification of these stimuli is also important in attempting any systematic study of change.

The first, and most basic, is change in the nature and extent of the market. A straightforward example is one where there is expansion or contraction in the market for a commodity to which the enterprise responds by expanding or contracting production. Expansion of the market was the background to the changes introduced by the firms manufacturing and distributing liquified gas in France and steel in Sweden. As for contraction, we have already considered the general industry-wide contractions in the coal industry and the railways which demanded adjustment at the enterprise level.

A second stimulus to change revealed by these case studies is shortage of suitable manpower. The introduction of automatic data processing into the German pension department was at the instigation of the employees themselves, who were concerned with the difficulties arising from the overloading of work and consequent delays. Shortage of suitable labour was also a feature of the case where a computer was introduced into the accounts department of an engineering concern.

A third stimulus to change at the enterprise level is change in the total organisation through take-over or amalgamation. These take-overs will usually themselves reflect wider market considerations. At the industry level transfer to state ownership may be the occasion for review of administration and modernisation. This was one feature of the coal story in the United Kingdom; it was also a feature of the account of modernisation and change in the French gas industry. The occasion for the reconstruction and modernisation of an iron foundry in Austria was its take-over by another concern. Take-over too, provides the background for the erection of a new engineering plant in one of the German studies.

A fourth stimulus to change may come from technical advance itself. In many ways it is misleading to list this separately since the extent to which inventive effort is an independent variable in economic growth is still very much an open question. However it does appear from the OECD case studies that there is a qualitative difference between the "defensive" and the "offensive" adoption of new techniques by the enterprise. In other words, there are organisations where technical advance is itself given as the reason for change, with perhaps the addition that the new methods had to be adopted if "we were to keep ahead". These provide examples of what we mean by the "offensive" adoption of change. This in its turn is linked with a distinction, to which we shall return later in this paper, between those organisations where "change" in some senses appears to be almost continuous. These are most often the organisations where the "anticipatory" adoption of new techniques is encountered. But there is also "change" which assumes a crisis character and occurs only in response to the most irresistible pressures, such as backlog of orders, or major contraction of the market.

## Conclusion

This general survey has served to show the variety in the type of change situation encompassed by the case studies. The classification system is crude. But it may assist us with posing such questions as whether particular types of change are associated with particular manpower adjustment problems; or whether particular types of change can be said always to produce other consequent changes. We may well discover, however, that without further refinement our classificatory system has weak predictive value, but this is a problem to which we shall return.

## Section 3

## THE ORGANISATIONAL FORMS AND SCOPE OF MANPOWER PLANNING

In Section I we drew a distinction between manpower forecasting or projection, and manpower planning. None of the OECD case studies concerned firms or organisations which possessed special manpower planning departments. Nor did it appear that any of them made routine long-term manpower forecasts. Such forecasting is, as we have said, becoming more common, particularly in larger companies, but many concerns remain sceptical about its predictive value(I). On the other hand most of the case-studies involved firms or organisations which had personnel or employee relations departments. One or two of the small concerns did not, but the other cases where no specific reference was made to a personnel department were mostly government or semi-official organisations, where there were detailed and formal rules governing staff conditions as well as establishment departments responsible for many of the functions which would be undertaken by the employee relations department in a private firm.

The kind of manpower planning, therefore, with which the case-studies are concerned is manpower planning for a specific example of change. Sometimes this change will be taking place over a very long period of time - six years in the United States oil refinery; ten years in the distribution of liquified gas in France; five years in the case of the Atlanta region of the United States Internal Revenue Service; twenty years in the case of the Swedish telecommunications switch to automatic dialling of long-distance telephone calls. In others it will be accomplished in a relatively short period of two or three years.

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(I)R.Beaumont and R.Helfgott. I964. op. cit. p.266.

It should also be remembered that the unit of change differs. In some cases we are dealing with whole industries, or nation-wide administrative units of government; in others we are concerned with companies operating more than one plant, although they may themselves be subsidiary companies of other larger concerns; in others we are concerned with a single plant owned and operated by a single independent company. What types of organisation were devised for dealing with manpower planning problems?

## Types of special planning organisations

The first main division is between those bodies which established some special planning organisation or mechanism to handle the change and those which did not. The twenty-nine studies divide almost equally on this matter. Those concerns which did establish a special mechanism usually called them special planning groups or project teams, membership of which was drawn from across the different functions of management. But there was always considerable variation in the precise membership and indeed, organisation of these planning groups as the following examples will show.

In the British steel company initial consideration was given to a development scheme for modernisation after takeover by a large group. A small study group was formed headed by the technical director. After a general report to the Board of Directors on the merits of various schemes a decision was taken by the Board to embark on one of these, costing £58m and involving the introduction of a completely new steel-making process from Sweden, a new primary rolling mill, a new narrow continuous hot strip mill and the installation of four computers for production planning and process control. A development committee was then formed, membership of which included directors and senior executives of the parent company, consultants, and directors and senior managers of the company concerned. Project teams were also formed under four directors to deal with the technical, production, financial and engineering aspects of the scheme. At yet another level, specialised groups were set up to serve these teams and it was at this point that manpower implications were specifically recognised. One of the specialised groups was responsible for considering manpower requirements, implications for wage rates and the provision of training facilities.

Another example where a number of planning bodies operated is the rubber hose company. The firm manufactured a range of rubber products, and once again after a take-over, the decision was made to embark on a £3m reorganisation plan which was primarily concerned with the building of one new factory for the manufacture of rubber hose in place of two existing units. In connection with planning the new hose unit, two senior officials of production and sales had a monthly meeting with the managing director, to which heads of departments could be called according to the subject under discussion e.g. finance, technical production, engineering etc. There was also set up a hose project group, headed by a project engineer lent by the American parent company.

This group was responsible for the actual building programme, the supervision of contractors, lay out, and choice and installation of equipment and machinery. Finally there was a labour standards committee consisting of the industrial engineering manager, the leader of the hose project group, the wages controller and the industrial relations officer. This committee concerned itself with manpower matters, job specification and evaluation, rates of pay, etc.

These were two examples of large-scale change. A smaller change was involved in the concentration and reorganisation of production in a Norwegian chemical factory. The planning organisation was correspondingly less complex. A rationalisation committee was set up consisting of the chief engineer from head office, and engineers from the two factories likely to be involved in the reorganisation. The company already had a standing committee to discover new products which might lend themselves to production in the company's factories. But a special working committee was also set up to consider the specific question of new production for one of the factories to be involved in the reorganisation. These two committees made recommendations to the Board of Directors which took the final decision. When the decision came to be implemented each factory concerned was responsible, and the committees ceased to function, co-ordination being supplied directly by head office.

Two Swedish case studies supply examples of functional differentiation between the planning teams. The one concerned with the installation and commencement of operations of a new rolling mill provides one of the few examples where manpower planning was recognised on an equal level with technical and organisational planning. Three teams were set up to deal with each of these problems, once the Board of Directors had accepted the proposals of the initial preparatory team. These three teams had overlapping membership and their work was co-ordinated by the technical director.

In the Swedish shipyard two project teams were formed. The first undertook the task of planning the new production and the second was concerned with methods analysis and job specification. On the other hand, the installation of the new wider paper making machine in Germany, was handled by a single committee. The initial stages of investment planning, adapting ideas to the existing plant, working them out to the point where tenders could be placed, was put in the hands of a single planning committee under the chairmanship of the business manager and with the technical manager and plant engineers as members. In this case manpower planning was specifically regarded as part of technical planning.

## Change without special machinery

There was also considerable diversity among those cases where no special machinery for handling change was established. The French company concerned with the distribution of liquified gas belonged to an international group. It made use of the group services - an operational research group and a computer pool to estimate future growth in demand for the product, and to prepare a profitability study of the various technical possibilities of meeting the increased demand. From this study a further study determined the number and optimum size and siting of filling centres. The company's own technical department then prepared a modernisation scheme from which it supplied the social relations department with the required staff structure of the new depots. It was then left to the social relations department to implement the manning plans and to reallocate labour.

In this example existing specialist groups carried out the planning process in a series of well-defined steps of which detailed manpower adjustments were almost the last. This method was also characteristic of the planning procedures in the United States petroleum refinery. Here, in top management's view, one of the most serious deterrents to carrying out operating changes in the refinery was management attitudes. As a first step, therefore, what came to be known as a "profitability improvement programme" was undertaken among all levels and kinds of management. Engineers were in charge of preparing the modernisation effort, but line managers were involved in estimating the effect of technical and organisational changes upon manpower requirements. These manpower changes were then communicated to the industrial relations staff whose job it was to work out the necessary adjustments.

Two case studies from Germany supplied an interesting contrast between the effectiveness and problems of using existing management structures for handling change. In one, an engineering concern which had grown piecemeal in the postwar period, and was then taken over by a larger group, embarked upon a major reorganisation and re-siting of its finishing processes. But as the report says "Just as the main plant bore witness to the development of the firm from its humble beginnings, so likewise did management show traces of the time when a small number of persons, whose responsibilities were not too clearly defined, were in charge of the firm". The approach to change was first via the main Board and the sales department which made suggestions about the type of products suitable for the firm to manufacture. The production department then earmarked the feasible suggestions for production planning, where details of the personnel required for production were decided upon. Finally the personnel department investigated the possibilities of finding the required manpower on the labour market. This fragmentation of responsibility led to serious problems of recruitment of suitable labour.

In contrast the German concern, which undertook the building of a new rolling mill, had a particularly strong and comprehensive personnel department which played a central role in management. The works director had a keen interest in the scientific handling of personnel problems. In this case the emphasis was very much upon the two-way flow and interaction of planning between the technical and the personnel departments.

## Factors influencing the establishment of special, or the use of existing, machinery

Certainly no differences emerge to suggest that special machinery is more often used in one country than another. But it is possible to discern certain situations which, within a country, are more likely to be handled by the setting up of special machinery than others.

When technical change is involved (or change in the form of capital input as we described it in Section 2) which is very new in the country, then there is a predisposition towards the use of special planning teams. The Swedish shipyard and rolling mill, the British steel company and rubber hose company, and the German paper making firm all illustrate this point.

The case-studies of office automation also fall into this category. The United States Internal Revenue Service had a permanent planning and research organisation which advised on the use of automatic data processing systems and made the major recommendations which were then evaluated by a firm of management consultants. But, in addition, a regional advisory group was formed to study the detailed practical problems of conversion in the Atlanta region. In the smallest of the data processing studies the planning was done by an individual who subsequently became head of the newly formed computer systems division. In the pension department in Germany the representatives of the company supplying the computer did a lot of the preparatory work, but in conjunction with members of the staff of the department who were assigned to the planning task. Planning the introduction of the computer into the Canadian insurance company was handled by what was called a research group, which, early on, recommended the establishment of five specialised personnel areas to study staffing problems - for programming the computer, for operating it and for handling the input and output under the three main types of policy handled by the company.

In these cases of technical change, both in the manufacturing process and in the office, certain characteristics of the situation appeared particularly to be associated with the setting up of special planning bodies. First there was the basic unfamiliarity of the techniques being adopted. Second they were techniques, which required radical change in job content and manning. Third, it tended to be once and for all change which involved the building of new plant or the installation of a new piece of machinery, Fourth the technical change also carried implications, more or less far reaching, for organisational change in the plant or unit where the technical change was being introduced. One example of this was the Swedish ship yard, but the best illustration is provided by the data processing examples where the change required a new approach to the whole functioning of the organisation, that is "a total systems approach".

The absence of special planning machinery on the other hand seems to be particularly associated with change which is not to be seen as once and for all, but continuous. It also characterises the situation where the existing organisational structure of the enterprise has built into it some kind of long term planning machinery. Two of the French case-studies provide an interesting illustration of these points. In the example provided by the distribution of liquified gas there was an international parent company with departments recognised as fulfilling a planning function. At the other end of the size scale the French hosiery and knitwear firm also had permanent planning machinery to forecast demand and to translate it into different production schedules for different types of garment.

Some case studies implied that the absence of any special planning machinery was due to the already close integration of the specialist aspects of management function. We have quoted the German rolling mill where the personnel department played a central role and where there was constant exchange between the technical and personnel departments. The British dyestuffs company which undertook a large scale modernisation programme, not only had the services of a parent company from which again research and planning help was available, but also locally had a committee of management which met daily to coordinate activities.

## The role of external agents in planning

To some extent the importance of the services supplied by parent companies or by groups lies in the fact that they are external to the unit affected by the change. Not only are they then able to draw on the experiences of the company or undertaking as a whole, they are also to a certain extent, able to view objectively the problems of the unit they are called upon to service or advise. Other external agents also played a part in the planning process. The case studies provide several examples where information and advice was given by the firm supplying the plant or machinery, or by other firms where the new technology was already in use. This, as we shall see, was a particularly useful source of information on manning requirements.(I) Outside consultants were also engaged from time to time. In other studies of change we find examples of individuals from outside being introduced into the organisation and being given specific responsibility for planning. The detailed formulation of the plan for the contraction of British railway workshops was of this nature. It was largely the work of one man who joined the Board specially for this purpose and left again once the plan was well under way(2). In private industry the emergence of an individual responsible for the planning of change frequently follows from a take-over and the reorganisation of Boards of Directors. Thus the role of external agencies range from advice through to acting as a 'change-agent' or catalyst.

## Time taken to plan

There is little evidence of any association between the existence, or otherwise, of specific planning machinery and the time taken to plan or to carry out the change. The diversity among the case-studies in the matter of timing is considerable.

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(I)See below section 4 p.48.
(2)P.Lesley Cook. I964. op. cit.

Some of them are describing changes in a whole industry over decades or more. Both the case-study of the French gas industry and the British coal industry start with nationalisation in 1946 and the decision to have a general modernisation programme. Both programmes fall into two stages. In the gas industry there was a period, from 1946 to 1953, of the closure of small non-profitable works and the installation of high grade coking plants. After 1953 the industry moved into the field of petroleum products and the installation of cracking plants. The division into two periods in the case of the coal industry was dictated by the state of the market. Up to 1957 the main emphasis was upon getting as much coal as possible and mechanisation was a means of increasing output without much impact upon the level of manpower requirements.After that date, there was a general recognition that competition from other forms of fuel together with more efficient methods of utilising coal had produced a situation where a run-down of manpower was required, which was intensified by the improved methods of coal-getting.

It is also difficult to speak of a time scale in the other case-studies which are describing events at a national or industry level There is, on the one hand, the time taken between the decision to initiate change at the national level, and its completion. In many cases this had not been achieved in all units of the concern by the time of the case-studies. On the other hand, there is also the elapse of time between the decision to introduce and the completion of change in one particular unit. The Swedish telecommunications industry provides a good example of this contrast. The installation of automatic dialling of long-distance calls began in 1953 and is expected to be completed in 1970. The case study describes the initiation of this programme and it also includes an account of the installation of automatic dialling in one particular area. This was decided upon in 1960, work began in 1961 and was due to be completed in 1965. In situations of this kind, where the change has to be effected in a number of relatively self-contained units of the organisation, much of the relevant planning has been done centrally and this influences the time taken to plan and carry out the change in a particular unit or locality.

Even where the studies are examples of more discrete change it is difficult to measure the time taken. When does change begin ? When it is first discussed? When a serious study of the feasibility begins? When the first orders for plant or machinery are placed? Even if arbitrary decisions are taken about the point at which change begins, still no clear pattern of timing emerges. The Canadian life insurance company set up its research committee and began planning the installation of automatic data processing in 1955. The first computer was ordered in 1956.

The United States Internal Revenue Service received a report from its planning and research organisation in December 1958. In January 1960 specifications of the system were sent to computer manufacturers and in July 1960 a contract was awarded.

The cotton firm in the United Kingdom provides an example of a longterm plan carried out in stages. The case-study itself relates to the second stage only, the modernisation of a second unit on a single site. Work on this was due to begin in 1960 but uncertainty in the industry and about the position of the company delayed starting until 1962. The main changes were completed by 1964.

It is somewhat easier to trace the timing of the separate stages in the German rolling mill. Planning began in 1960 and the decision to go ahead with the modernisation programme was taken in March 1960. Building began in July 1961, but the full programme was not completed at the time of the case-study, at the end of 1964. In the case of the Swedish shipyard the company bought the land in 1957. The decision to build the new yard was taken at the end of that year, and construction began in March 1959. An example of one of the longest periods of change was the reorganisation and concentration of production in a Norwegian chemical firm, which was spread over seven years. We referred earlier to the setting up of a rationalisation committee in the firm. This was in 1955. The problem the committee was considering developed from simply being one of new techniques to one of reorganisation and concentration of production. It was not until 1959 that the first transfers of production took place, and not until March 1962 that they were completed.

The other problem in making any consistent comparison of timing is to decide when the change has been completed. So often the concern moved on to a next stage, or as we have put it, is engaged in continuous change. If the case study of the oil refinery in the United States is examined, it will be seen that there are a number of discrete steps each of which could be described as a change - the increase in the capacity of the refinery's catalytic cracking unit, the replacement of a gas absorption plant and coke still by a vapour recovery unit, the introduction of new computers for planning and control of production. But they are contained within a single programme which was spread over six years. In the Canadian insurance company the various sections of the work, ordinary life insurance, group life insurance, etc., were transferred to the computer one by one. By the time the transfer was complete a new and larger computer was being installed.

But if it is impossible to speak in precise terms about the time table of change, and of its stages from planning to completion, one general impression is left by the case-studies. It is that the planning and implementation of change is a slow process. As other investigations have reported "the time scale of decision is much longer than the formalistic analysis of the decision-making process suggests. In the case of some of the firms covered by the investigations, four years had elapsed since the original contact had been made... It seemed that intentions had taken four years to materialise into plans and harden into decisions"(1).

## The scope of manpower planning in the case-studies

In subsequent chapters we shall examine in detail the specific techniques available to, and used by, the different organisations in their manpower planning operations. At this stage it is useful to review the general scope of what was regarded as manpower planning, whether by the specific planning organisation, or by general management. First it is interesting to note, that although these case-studies were specifically selected to illustrate the process of concurrent planning of manpower requirements and technical change, the manpower aspects were still very largely secondary to the technical aspects. Not enough detail is given to enable us to study what happened when conflicts arose between technical and manpower requirements. Sometimes, as in the German engineering concern, there was clearly little attempt at reconciliation. Manpower requirements were passed on to the personnel department to be carried out as best they could. In a few cases hints are given a process of negotiation. The German rolling mill report states that among the tasks of the personnel department by no means the least consideration was "to counter the tendency of the technicians to overvalue requirements for the new jobs". Here requirements mean skill requirements and it is implied in the report that in this particular enterprise the personnel department was in fact equipped with sufficient technical knowledge to be able to carry on a discussion with the technicians in which its point of view would carry weight.

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(1) Joan Woodward. Industrial Organisation: Theory and Practice. Oxford University Press, London 1965 p. 192.

Another area of interest, in which our information is rather scanty, is on the division of responsibility between planning and execution. In some organisations there was a clear dichotomy. To quote once more the example of the distribution of liquid gas in France, there was a division of function between the planning and the execution groups. In the United States oil company on the other hand, it appears that a deliberate attempt was made, despite a clear ordering of the stages of planning, to break down sharp barriers of this kind and in particular to involve line management in both planning and execution.

As might be expected, however, in all cases the starting point for manpower planning was first the assessment of what the change meant in quantitative and qualitative terms for the labour force. The problems of estimating manning requirements and the skill requirements of new jobs loomed particularly large. As we shall see, how difficult or easy these problems were to solve turned very much on whether the technique was a new one or was one which could be studied in operation elsewhere. It was also closely linked with whether or not the specific technical change was the occasion for a more fundamental reassessment of work organisation throughout the unit.

There was a good deal of variety in the extent to which consequent changes for the wage and salary structure were seen as part of manpower planning. In the British rubber-hose pipe case we have already noted that the labour standards'Committee, set up as part of the overall planning mechanism, was specifically charged with studying the implications for methods of payment and wage levels. The British steel company also brought the effect of the new methods of production on wage rates into the arena at an early stage. So too, did the German paper-making concern. In others, as we shall see, these problems were largely ignored at the planning stage, and there was then the danger that they became issues which had to be fought out at a rather late stage between management and the representatives of the workers.

Where the adjustment procedures required specific administration by the concern, such as the setting up of, or extension of existing facilities for retraining, then these became part of the manpower planning process. So too did miscellaneous activities like the organisation of services to give career advice to employees to be dismissed or transferred. It was also part of the task of manpower planning to initiate or to make possible the utilisation of devices for obtaining flexibility in the distribution of newly recruited manpower, or in cushioning the impact of given manpower changes. This involved considering whether temporary staff could be utilised, or in other situations,whether all newly recruited labour could be sent to 'labour pools' for a period, in order to see to which type of work it was best suited.

These latter procedures, aimed as they are at winning a degree of flexibility, could be viewed as part of the general timing problem which emerges as an important aspect of manpower planning. The right quantity and quality of labour has to be available when the new plant and machinery is available and this as we shall see is an important factor limiting the choice between different methods of reducing manpower, e.g. attrition, early retirement, etc., and of recruiting and training labour. Overlapping production between the rundown of old plant and equipment and the starting up of new, presents particularly difficult planning problems as both the examples of the German and Swedish steel firms show. A distinct advantage seems to rest with those national organisations where change was to affect a number of discrete units. Here it was possible to test the effect of change in one area and learn from that experience. It was also possible to vary the operation of the plan according to local factors like the local rate of unemployment, availability of necessary manpower, etc. Timing in relation to the possibility of mobilising other sources of employment for the displaced workers was an essential element, for example, of the British railways'workshop plan(I). In reverse,the Swedish telecommunication's case-study shows the advantage of being able to time the switch-over in particular units to coincide with a low level of the labour force in those units. Finally, when we come to consider the role of employee consultation we shall see that the timing of announcements to workers plays an important part in the planning process.

## Conclusions

It is extremely difficult, on the basis of any studies so far available, to generalise about principles which might be associated with the adoption of a particular organisational form of manpower planning. It seems likely, however, first, that the initial determining feature was the existing management structure of the concern. Second it appears that the more 'unique' or 'discrete' the type of change the more likely it was that some special organisation would be established within the unit to

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(1) D. Wedderburn 1965 op. cit. p. 26

deal with its manpower aspects. Third it appears that those concerns which were continually experiencing change (for the most part, although not exclusively, the large ones) were most likely already to have developed a management organisation into which some sort of permanent planning mechanism was built. Fourth it appears that whatever the organisational form of planning, manpower aspects were still largely secondary in consideration to the technical ones.

Two interesting problems remain for further investigation. Had we known more about the management structures both formal and informal in our case-studies it might well have been possible to discern a more fundamental relationship between the planning mechanism used and those management structures. We might, for instance, have found special planning bodies developing more often in those concerns with "mechanistic" management systems which have been described as "appropriate to stable conditions", and we might have found no such special bodies in concerns with organic forms of management "appropriate to changing conditions"(1). But this must remain a conjecture.

The second interesting area for study is the longer term impact of the changes upon management structure. Two of the automatic data processing case-studies raised problems concerning the impact of the new systems upon the old levels of middle management. Certain difficulties were reported in finding posts of similar responsibility in the hierarchy for the middle management displaced by the computer. The introduction of the computer into the German pension department also raised problems of the distribution of authority at top management level in the department. These appeared similar to other situations when the computer has been described as emerging as "a focus of conflict"(2). In the German rolling mill reference is made to the problem of large-scale transfers of middle and senior management when certain rules governing promotion exist, and certain expectations about prospects have developed. This particular concern sought to overcome these problems by, as far as possible, engaging newly trained engineers from outside.

But in so far as longer-term effects of change upon management are concerned it seems possible that the very institution of special planning machinery could itself have some permanent influence upon the definition of spheres of responsibility among different levels of management. But such changes cannot be understood in isolation from the change in the technological characteristics of the production system. Recent studies have suggested that the crucial variable is defined by reference to the type of product (integral or dimensional) the scale of production-unit, (bath or mass)- and the time interval of production (intermittent or continuous)(3). Speaking of her own studies Miss Woodward says:-

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(1) The distinction made by Tom Burns and G.M. Stalker The Management of Innovation. Tavistock Publications, London 1961. p. 5 and Chapter 6 on.

(2) W.H. Scott 1965. op cit. p. 98.

(3) For this typology see J. Woodward op. cit. 1965. p. 39.

> "The case-studies appeared to confirm that technical changes involving a change in the nature of the production system have the greatest effect upon organisation and behaviour"(1).

The impact of changes of this kind upon management organisation is also likely to have its manpower consequences, and to the extent that it becomes possible to predict them, they too can be brought within the general scope of manpower planning.

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(1) J. Woodward 1965. op. cit p. 198.

# Section 4

## SOURCES OF DATA AND METHODS USED IN ESTIMATING MANPOWER ADJUSTMENTS

### Problems of definition

In this and the following sections we shall be concerned with the nature and extent of manpower adjustments following change at the enterprise level, and with a review of the mechanisms used for achieving the required adjustments. It is of course the quantitative aspects of manpower change, and in particular, reductions in manpower, which receive most public attention. Just how much attention,is illustrated by the fact that in Britain, despite the generally high level of employment of the post-war period, a special word has come into common usage to describe the phenomenon of dismissals arising from economic change in the enterprise. That word is "redundancy". As defined in the British Redundancy Payments Act 1965(1) a dismissal is by reason of redundancy if it "is attributable wholly or mainly to -

(a) the fact that his employer has ceased, or intends to cease to carry on the business for the purposes of which the employee was employed by him, or has ceased, or intends to cease, to carry on that business in the place where the employee was so employed, or

(b) the fact that the requirements of that business for employees to carry out work of a particular kind in the place where he was so employed, have ceased or diminished or are expected to cease or diminish".

Large-scale redundancies such as those ensuing from the closure by the Armour Company of the United States of six major plants displacing 6,000 workers, or the British Railways Board's announcement of the closure of seven main workshops displacing 20,000 workers over five years, are events likely to hit the headlines. This is understandable for the man in the street becomes most conscious of change when its impact extends beyond the boundary of the enterprise or company, and the worker finds himself, at worst without a job, at best having to "change jobs". As one German trade union commentator has expressed it:

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(1) See above Section 1, P. 16.

> "Even in the best of circumstances i.e. under conditions of general manpower shortage, the inconvenience to the worker arising out of having to change jobs needs no elaboration. Though new jobs may be available, they are often less desirable ...."(1).

It is concern with these problems which has lain behind the move of recent years in favour of various measures to ensure "job security". As Professor Myers has described the position, it can be said that measures have been developed in some countries

> "which remove job control from employers and give to workers a control resembling that of a property owner over his property"(2).

The concept of "property-rights" in a job is fast becoming very fashionable. It was used as the major philosophical basis for the justification of the Redundancy Payments Act by the main British government spokesman(3). But as commentators have been quick to point out there are, in this context, problems of defining "a job". Do the property rights rest in a job in a specific location, at a specific rate of pay with a specific work content ? Or do they rest in an unspecified job with a particular employer? But who then is the employer, the company running a particular plant, or the group of which the company may be a subsidiary?

The British attempt to legislate financial compensation for dismissals arising from redundancy has made some of these definitional and conceptual problems of immediate concern. For instance, an employee is not entitled to a redundancy payment if his employer makes him a written offer, within a specified period, of another job which "constitutes an offer of suitable employment in relation to the employee" and the employee's refusal of that offer is adjudged to be unreasonable.(4). Already the interpretation of these phrases has provided a number of cases which have come before the appeal tribunals set up under the Act. They have involved consideration of whether jobs in a different geographical area, jobs with different opportunities for overtime earnings, jobs with different work content and jobs of different i.e. lower status, are "suitable".(5)

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(1) G. Friedrichs "Planning Social Adjustments to Technological change at the level of the undertaking". International Labour Review vol. 92, No.2 1965.

(2) F. Myers. Ownership of Jobs Institute of Industrial Relations, University of California, Los Angeles, 1964

(3) Hansard 26th April, 1965, Col. 35-45

(4) Redundancy Payments Act 1965, Section 2.4 (a)

(5) Industrial Tribunal Reports of decisions. Vol.1, Part 1. et seq.

In the British situation the question of financial compensation only arises when the employer terminates the existing contract with his employee. But it is a short step conceptually, from accepting that such a situation calls for compensation, to accepting that transfer within the enterprise to less desirable work, but not involving a new contract of employment, should also be compensated, or at least, should occur only when guarantees of no loss of earnings have been given. Such a demand has been forcibly expressed in the article of Herr Friedrichs quoted above :-

"There can be no compromise on the principle that an equivalent job at equal pay should be made available whenever a worker is transferred within the undertaking through no fault of his own"(1).

So the position has now been reached, in public debate at least, where recognition is given to the fact that the consequences of change for workers are far more complex than simply the question of "a job" or "no job". If we examine the OECD case studies we find that in only eight out of twenty-nine instances were permanent employees dismissed(2). But in all twenty-nine cases "labour displacement" occurred, in the sense that there was rundown of the work force by attrition, retirements and the stopping of recruitment, or completely new work tasks were introduced requiring job changes in the same place, or men were required to move geographically. Before we investigate this "labour displacement" in more detail, what methods were used within the enterprise, to estimate the nature and extent of the change? What information was available, or made use of, to estimate how many workers would be affected and what change in job content there would be.

## Sources of information for constructing the manpower balance sheet

In section 3 we examined the organisational forms of manpower planning in the case-studies. Here we are concerned with how those responsible for planning set about their task. Only one study, the Austrian rolling mill, reports the construction of a detailed manning table showing what was to happen to each individual worker displaced from the existing processes. But whether it did so formally or not, most planning was concerned with constructing a manpower balance sheet. First there was the task of analysing the numbers and kinds of workers involved in the existing process. Where technical change in manufacturing activity was concerned this appeared to be relatively simple, once the area to be affected by change had been defined. The administrative changes, and the introduction of electronic data processing into offices involved a more complex operation. For instance the Swedish State Railways instituted an aggregate analysis of the whole undertaking with a specialist study of :

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(1) G. Friedrichs 1965, op. cit.

(2) For the significance of the distinction between "permanent" and "temporary" see the discussion below section 5 p. 57.

(i) The distribution of existing tasks among employees

(ii) an analysis of those tasks in time and quantity

(iii) a classification of tasks with regard to the qualities required for their performance

(iv) an analysis of the relationship between the task and the organisational unit.

The Norwegian customs service took as their starting point "the existing arrangements of duties at the customs centre. The clerical duties were appraised .... On the basis of accurately recorded routines and particulars of the volume of work, an appraisal was made of each sub-department".

In other words where change was to be carried out in units which were essentially concerned with the processing of information, the answer to the question "who and how many people are doing what, now" was not always readily to hand and a good deal of initial analysis was required.

The second stage involved the completion of the other side of the balance sheet; what numbers and what quality of workers would be required after the change? In the simplest cases of expansion or contraction of existing production, without change in the combination of inputs of capital and labour, the estimates could be based upon existing manning, scaled up or down appropriately. This was also the technique used where the effect of a change of technology was to scale down proportionately the manpower requirements. The United States oil refinery, for instance, refers to the installation of one large refining unit with one maintenance crew, to replace ten smaller units with ten maintenance crews.

Even in those instances where the manpower requirements of the new techniques were not directly proportional to the old manning requirements, firms made extensive use of the study of manning requirements of similar types of equipment. Here enterprises which were part of larger groups were sometimes at an advantage, in that they could draw upon the wider group experience, as did the dyestuffs company in the United Kingdom. The newer the type of technology being introduced, the more reliance was placed upon the advice of the manufacturers of the equipment. In the Austrian rolling mill, specific manpower requirements were worked out in collaboration with the manufacturer of the mechanised equipment. In a number of the automatic data processing case studies, the computer suppliers also provided information about manpower requirements. Particularly in the case of technology completely new to the company or even to the country, advice was also sought from other organisations at home or abroad who already had experience of the type of equipment. Teams from the Austrian rolling mill visited similar plants at home and abroad. The British steel company sent teams to study the oxygen steel-making process at work in Sweden.

The problems of estimating manpower requirements were perhaps most acute for the company sub-contracted to carry out the leak-tightness inspection in an Atomic Energy plant. Here was a completely new activity to be staffed in a new industry. The main requirement was the estimation of the qualifications needed by the new staff, and this was undertaken by the firm's Industrial Psychology Department in liaison with the sub-contractors, who already had experience of vacuum techniques and with representatives of the Atomic Energy Centre itself. Job descriptions had to be compiled on the basis of the plant's technical structure, and then graded according to the level of aptitude required.

An important adjunct to the above methods of assembling data, was some form of job evaluation or work study used for estimating operative requirements. The British cotton mill reports the use of the work study department of the parent company. The labour standards committee set up in the rubber-hose company spent two years dealing with job specifications, job evaluation and the establishment of labour standards. Sometimes use was made of only a rough time study, as in the case of the Norwegian chemical company. But this was because management was not unduly worried about some looseness of manning because they expected an expansion of demand in the future. The Swedish shipyard made use of M.T.M. (Methods Time Measurement) for the first time, it is believed, in a shipyard.

The main emphasis in the reports is upon planning manpower requirements for operating staff, that is manual workers, in the case of the manufacturing concerns, or ordinary non-supervisory white collar workers in the administrative organisations. But there are enough references to the problems connected with the recruitment and staffing of special groups to suggest that these may require particular attention at the manpower planning stage. The German and British steel firms and the Swedish shipyard all reported new requirements for specialist, technical staff. The new technologies threw up additional requirements for production planning and control, work study experts and for inspection. There were also the problems encountered in the recruitment of supervisory staff from foreman level upwards. Finally a number of reports show the importance of planning at an early stage for a nucleus of skilled and experienced workers to be available, particularly when the techniques being introduced are very new. The German paper-making firm and the rolling mill both provide illustrations of this point.

When the two sides of the balance sheet have been completed a surplus or deficit emerges. In some cases, of course, both can emerge - a surplus of one kind of labour and a deficit of another. But we have presented here a rather "ideal" view of the estimation process and we must now refer to some of the practical difficulties which emerged in the course of the exercise.

We have spoken as though the nature and estent of the "change" to be undertaken, was well-defined. This was not always so. Indeed, it seems very probable that in a situation of change, the possibilities for further reorganisation may suddenly be seen, or more economical ways of tackling a problem may be perceived only after a beginning has been made. To give one example, although the general character of the technical changes to be introduced in the construction of the new German rolling-mill were clear when the manpower consequences were first estimated, the precise degree to which reliance would ultimately be placed upon automatic controls had not been decided. This introduced a degree of uncertainty about both the future quantitative and qualitative manpower requirements. A related problem often arises with the introduction of automatic-data processing. To what extent should conversion proceed piece-meal or to what extent should it be comprehensive? Caution may in the beginning suggest the advantages of a piecemeal approach, but before it has proceeded far the advantages of complete conversion may become apparent.

One of the clearest examples of uncertainty about what the "change" was, is provided by the French gas industry. As the case-study explains, in 1948 it was known that many old works would have to go, but the rate of progress depended on short-term factors like geographical and seasonal fluctuations in demand, and, even more difficult to predict, upon discovering new sources of supply.

> "In retrospect, it can be said that ten years ago the corporation could not foresee the discovery of the Lacq gas and its growing exploitation. Even after its discovery no-one could foresee how long it would take to find a process for getting rid of the sulphur it contained so as to make it useable".

Indeed, the situation was regarded as so unpredictable that the report concludes that "This is indeed a case of empiricism in employment policy".

In such a situation the process of change may require not one, but a series of labour balance sheets. This will also be the case if the old type of operation has to overlap with the new, in order to maintain continuity of output. Labour requirements at the mid-point of change will then be higher than the final requirements, as was the case with the new rolling mill in Sweden, and in a number of the automatic data processing studies. Firms which are in a good market situation, or where profitability is not necessarily a main consideration (such as public enterprises, a point which we shall discuss further below) will have much more flexibility in dealing with this situation than those firms whose economic position makes the short-term cutting of costs crucial. The important point at the estimating stage, however, is the early recognition of the different levels of requirements.

There are two other major sources of uncertainty which can complicate the estimation procedures. First, the initiation of change may affect the stability of workers already engaged in the enterprise, and turnover may rise. If the ultimate requirement of change is a reduction in the labour force this can be an advantage. Such was the case in the building of a new Swedish warehouse. But in other cases it introduces a large element of uncertainty which in particular, may make it difficult to plan for the right quality of labour. The German engineering firm had originally planned its manpower requirements on the basis of recruiting mainly unskilled labour because one of the objects of the rationalisation of processes was the reduction of the skill content of jobs. But as the changes got under way leaving rates rose, particularly among skilled men, and the firm's own apprentice school was unprepared for the consequent demands made upon it.

Second, ongoing changes in both the market for the product, and in the general labour market situation can complicate the process of estimation. These are most likely to occur when change is taking place over a long period. At one stage the management of the United States Oil refinery gave notice of a future reduction in manpower, which did not in fact take place because business improved. A year later, however, when another warning of impending dismissals was given neither employees nor their unions took it seriously although in fact it had to be put into operation. In the case of the building of the new rolling mill in Germany, marketing difficulties were encountered at the beginning of organising the staffing of the new plant. This stopped recruitment and led to some dismissals. But ultimately, because of a combination of factors - improved markets for the product, increased labour turnover, and a tightening of the labour market - the main difficulty experienced by the firm was the recruitment of enough labour and of the right quality.

The difficulties of forecasting all the variables which can influence the two sides of the balance sheet show how much the advantage lies with the large organisation which has a number of discrete operational units, when it is faced with the need to dove-tail technical or organisational change and changed manpower requirements. Provided that there is no necessity for change to be introduced simultaneously into all units, methods of estimation and procedures for achieving adjustment can be tested in their application in one unit, and thereafter possibly improved before they are applied to another. The studies of the conversion from manual to automatic telephone dialling in both Sweden and the United States illustrate the value of this kind of "learning from experience".

## Conclusions

These case-studies suggest that even in organisations where the need is recognised for manpower planning to run concurrently with technical change, the information required to carry out such planning may not be readily to hand. The newer the technology or administrative procedures are in the experience of the organisation, the more difficult it will find its task of estimating future requirements. The longer the change takes to carry through in one unit, the greater the forecasting difficulties become because of the possibility of variation in external factors. Finally there emerges the importance of making detailed estimates of requirements for particular types and quality of labour, at all levels, from staff to operatives, rather than being content with a crude estimate of net overall change in labour requirements.

## Section 5

## QUANTITATIVE ASPECTS OF MANPOWER ADJUSTMENTS

### (i) A General Review

Since it is the quantitative aspect of manpower adjustements which causes particular concern, we shall begin by reviewing the implications of different types of economic change for changes in the size of the labour force. In particular we shall try to isolate those factors which are associated with the direction of change rather than its absolute size. Then we shall consider the methods by which expansion or contraction is achieved. Finally, when an enterprise contracts by dismissing workers we shall consider the various measures available to it for easing the position of those workers on the labour market.

Had this study been concerned with the impact of change upon labour requirements in the economy as a whole it would have been useful to be able to distinguish the quantitative impact upon the labour force of each of the three types of change which were distinguished in section 2. In particular, there is considerable interest in measuring the labour saving effect of technological change. But this is difficult to do. First it is necessary to isolate a process or an operation where the task to be performed, or the output, remains exactly comparable, both before and after the change so that a direct comparison of labour inputs can be made. There then remains the difficulty of deciding whether the whole of this change is to be attributed to the change in technology itself. If it can be, this implies that in some sense the initial manpower complement was an optimum one for the old technology. But we can see from these case-studies that companies may become lax in their general manning policy and they may use the opportunity presented by the technical change to rectify this situation. This was the position in the United States oil Company which not only introduced a series of major technical change of a labour saving kind, but at the same time embarked upon a programme to eliminate what they have called "organisational fat". A reverse situation obtained in the case of one of the Norwegian chemical companies. In planning new manning requirements they were not unduly worried about over-provision because they were anticipating an expansion of demand for the product.

Studies of manpower saving from technical change alone have been attempted, but they require a distinctive analytical framework (1). The OECD case studies therefore describe the compounded impact of change of all kinds upon the quantity of manpower required by the enterprise. In this our experience is similar to other workers in the field who have used case-studies of whole plants or enterprises and who have concluded that :

"It is impossible to isolate employee displacements attributable solely to technological change because of the inter-relatedness of all the factors that determine the course of employment" (2).

In this report we cannot even make useful generalisations about the absolute magnitude of changes in the size of the labour force. For, as we have seen, we are dealing on the one hand with whole industries, and on the other hand with a single unit of a large administrative complex, or a single small firm. We are also deating with very different time spans. There is therefore no common denominator for measuring the magnitude of change. Among the twenty-nine ease-studies we have two examples of new enterprises starting up. The labour force problems of the first of these, the leak-tightness inspection for the Atomic Energy Commission, was recruitment. The second of these was an example of a diversification of activity by an existing company. This was the Swedish concern which built a paper-container factory using labour becoming redundant in other branches of the firms interests which the case-study did not describe. Among the remaining twenty-seven case-studies there were twenty where overall reductions in the labour force occurred, although as we noted in the last section, in only eight of these did dismissals occur. In one case-study the labour force remained unchanged and in six there was expansion. (3) These increases and decreases represent the net result of all economic change at the enterprise or unit level, despite the fact that all of the studies involved operations which, at some point, could be described as labour-saving.

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(I) For a discussion of some of these studies and further references, see R.C.Goodwin "Labour Force Adjustment of Workers Affected by Technological Change" in "The Requirements of Automated Jobs" op.cit. p.277.

(2) R.A. Beaumont and R. Helfgott I964. op.cit. p.25.

(3) The change in the labour force refers to that belonging to the unit of the organisation to which the case-study relates whether it be the company as a whole or a single plant or branch. There is also one case-study (the German rolling mill) where the case-study itself describes one part of a broad program of change. At an earlier stage dismissals were involved, but the case-study itself is describing a situation of labour recruitment. (see above section 4 p. 40).

## Factors affecting the direction of change

What factors distinguished the situation of those enterprises and organisations which expanded their labour force from that of those which reduced it; and what distinguished those organisations which reduced their labour force without dismissals from those which did not? The answer seems to be, differences in the market situation for the products or services of these organisations. Those which expanded their labour force were enjoying either a rising demand for their products, or change was embarked upon in an "offensive" situation, as part of a bid to increase the total share of the market. The Swedish shipyard, for instance, found itself faced with increased orders. The British rubber hose company had an expanding market for the new type of hoses it was beginning to manufacture. The installation of the new paper-making machine in the German firm involved an expansion of the labour force because of the move to four-shift working and the total operation was designed at least to maintain, if not to improve, the firm's competitive position.

It is to be noted that among the contracting firms were to be found one or two who, in the process of "rationalisation", ceased the production of particular lines which were uneconomic, or who dropped subsidiary activities outside the mainstream of their interest. This could happen even though the market for their main activities remained good,as was the situation of the British dyestuffs firm. But in general, the firms which reduced their labour force were in a difficult competitive situation. The United States oil company provides an example of a firm which felt the pressures of competition and the dangers of contraction of the market to be so great that it had to depart from its traditional policy of "no dismissals". The British cotton firm found that even though the reduced labour requirements of the new ring spinning frames were offset by the introduction of three, instead of two, shift working, nonetheless the market conditions were so uncertain that it was desirable to make a small reduction in their total labour force. The importance of the market is perhaps best illustrated by the contrast in experience of two nationalised industries, the French gas industry and the British coal industry. The former possessed certain organisational advantages over the latter, for it was allied to the electricity industry in a way which provided opportunities for the transfer of labour from one to the other. But the basic difference in the background against which modernisation and technical change were being carried out in the two industries was the difference between an expanding and a contracting overall demand for the two products.

The overwhelming importance of the market situation in determining the direction of manpower change at the enterprise level was also the conclusion reached by Beaumont and Helfgott. In their survey of thirty one cases, of what they specifically define as technological change, where data were available for a comparison of employment in the pre and post change periods, we find a distribution of increases and reductions very similar to the OECD pattern. They report one particularly interesting example which illustrates the close inter-connection between market conditions, technical change and expansion or contraction of the labour force. A company about to go out of business because of its inability to compete with a lower cost producer undertook a complete:-

> "restructuring of the manufacturing process, drastically reduced unit labour costs, enabling the company to cut the price of its products by 40 per cent. Although temporary lay offs were involved, a rapid increase in demand for the product not only absorbed all lay offs but raised employment 25 per cent above its former level"(1).

As for the characteristics of those organisations which reduced their labour force without dismissals, certain institutional factors contributed to the ease with which they did this. We shall see later that some structures lent themselves much more readily to the use of devices like transfer, attrition or early retirement. But a question of cost is also involved here, because the decision has to be, not only how much to cut back, but how soon. In other words the organisation has to decide whether it can afford to use such devices which depend on time to operate. Once again, therefore, the market situation becomes important. If the enterprise or organisation is enjoying rising demand it may feel able to run down its labour force more slowly. This is also the position for an organisation which is not faced with a market in the ordinary sense of the word, such as a government department. It is also the position of undertakings in a monopolistic position, such as nationalised industry or the distribution of liquid gas in France where the long term view of profitability can be taken.

Important as it is, however, the competitive environment of the enterprise or organisation can provide only a partial understanding of its policy in respect of quantitative manpower adjustments. The case-studies make only the most general references to market conditions. They report that they were "good" or "difficult" or that "costs were rising". In order to try to understand in cost terms alone why, in such a situation, one firm feels it "has" to dismiss labour while another does not, we should need much more detailed information. But there are strong indications that other less tangible considerations than cost, are important. Among these are concern with the reputation of the firm and a recognition of social responsibility. The Swedish and the United States telecommunication industries used remarkably similar, and as we shall see, very elaborate, techniques for handling the reduction in manpower required by the conversion from manual to automatic dialling. The Swedish organisation was a nationalised concern, the three United States ones were not. But all were strongly influenced by the need to give high priority to minimising the hardship involved for their employees. Such considerations are not purely altruistic. An employer must consider the possible effect of redundancies upon his future labour relations, and upon his labour turnover. Moreover the case studies suggest that there may be differences in general social attitudes, which in turn may be related to differences in the institutional framework of the country.

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(1) R. Beaumont and R. Helfgott I964. op. cit. p. 27.

These may place a greater or lesser responsibility upon the individual employer as compared with government and other agencies. Some of these aspects we shall return to in Section 9.

## Guarantees of no dismissals

But closely related to the acceptance of social responsibility and concern with the firm's reputation, is linked the question of guarantees of no dismissals. A strikingly large number of the OECD case-studies involved organisations which were under an obligation not to dismiss their employees. In some cases, like sections of the government service, this was a legal obligation imposed by statute. In others it was an obligation which the organisation had assumed voluntarily sometimes as a deliberate and long-term act of policy, sometimes with reference only to the specific change under consideration. Examples of both kinds are the Norwegian customs service, the Internal Revenue Service of the United States, the Swedish railways, Postal Bank and telecommunications service, the pensions Department in Germany, the distribution of liquid gas in France, the Canadian insurance company, the Austrian rolling mill and the French gas industry (1).

First it should be noted that these guarantees were dependent upon the workers being willing to accept transfers to jobs in other localities or to undergo retraining. Job security was offered, but with a particular employer (sometimes defined to include associated companies) and not in a particular job or in a particular place (2). Second, these guarantees were only available to "permanent" staff. In many cases the guarantees could only be fulfilled by extensive use of temporary staff who were subsequently dismissed. When we speak, therefore, of only eight case-studies involving dismissals it must be remembered that this refers to dismissals of permanent staff. The Norwegian customs service, the Canadian insurance company, the distribution of liquid gas in France, the telecommunications industries in the United States and in Sweden all employed and dismissed "temporary staff". A distinction of this kind, between permanent and temporary can be very important from the viewpoint of the internal relations of the enterprise. It can also be an important distinction from the viewpoint of the economy as a whole, if the temporary employees are also temporary members of the labour force. For instance the telecommunications industry made use of married women for the temporary manning of switchboards. Many of these women did not wish to be committed to permanent employment. Where, however, the "temporary workers" are in fact workers who wish to be permanent members of the labour force the enterprise is simply transferring the impact of manpower adjustment elsewhere in the economy when it adopts such a policy.

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(1) There were one or two references to firms which had a long-term policy of offering permanency of employment although this had to be abandoned (see for instance the oil company, the hosiery and knitwear firm and the dyestuffs company).

(2) See discussion above section 4 p. 46.

Most of the guarantees of no dismissal applied to white-collar employment. As we have noted this is a statutory condition of civil service employment in many countries, and this has not been without its influence upon other sections of white-collar employment. Historically there has also been a greater sense of obligation on the part of employers to provide security of employment for their white-collar than for their blue-collar employees. In addition, however, we find management motivated by a desire to reduce anticipated opposition to technical change by offering guarantees in advance to both white and blue-collar workers. This was the policy of the Canadian insurance company and of the Austrian rolling mill. There was only one example of a guarantee of no dismissal being incorporated in the collective agreement. That was the French gas industry.

## Methods of expanding the labour force.

In at least two of the case-studies we are examining a redundancy situation in reverse. The German rolling mill was able to meet some of its additional labour requirements from its other factories and iron ore mines where labour was being run down. The Swedish paper container factory drew on some of the people who were redundant among its forestry workers, and its pulp mill employees. It is significant however that the problems of labour recruitment could loom as large, and present as many difficulties, as the problems of contraction. This is partly due to the fact that the organisations concerned did not expect to find such problems, so the question of recruitment did not receive early enough attention in the manpower planning procedures. But as one would expect, the situation was most acute where the general labour market was particularly tight, as for instance in most of the German and British and in one of the Swedish case studies.

The more specialised the skills needed, the more care was required in approaching the problems of recruitment. The leak-tightness inspection unit had to adopt methods which would tap a large potential pool of workers who could subsequently be weeded through by stringent selection tests. The early recognition of future skill requirements enabled firms like the British steel company to make a start on the expansion of their apprentice training school in time for the output to begin to contribute to the manning requirements of the technical change. But the German engineering firm originally thought that its main requirement would be for unskilled labour, with the result that not only was the apprentice school not expanded, but measures were not taken to retain even the output of the school.

Recruiting groups of key workers also presented difficulties, particularly in those situations where old processes were to be kept in production while new ones were started up.

Here a certain advantage seems to lie with organisations like the steel companies where a hierarchical structure of operatives existed. Vacancies were thus filled by promotion through the hierarchy and replacements could consist mainly of unskilled labour. Other firms also attempted to obtain some flexibility in the allocation of newly recruited labour by making use of a general labour pool. New workers here obtained some experience of various jobs before being permanently allocated to a job.

The recruitment of foreign workers featured only in the German case-studies. Reference is made in both the rolling mill and the engineering firm to the high cost of such labour because accommodation and welfare facilities have to be provided by the firm. For the most part, not only are such workers unskilled, but they also lack industrial experience and there may be problems of communication. In the engineering firm, where the requirements were for more skilled labour than had been anticipated, the reliance upon unskilled foreign recruits led to an attempt to substitute quantity for quality of labour.

The longer the period over which recruitment of labour could be spread the less were excessive demands likely to be placed upon the local labour market. Where shortages of particular kinds of workers could not be met, some firms had recourse to sub-contracting. The German paper-making firm sub-contracted some of its maintenance work. In other instances shortages led to further change. The German rolling mill attempted to solve its maintenance problems by introducing a system of regular preventive servicing, by which they hoped not only to reduce the overall number of maintenance worker's required, but also their average skill level. Some vigorous recruitment campaigns had to be engaged in. The German rolling mill used a series of advertisements in which photographs of actual jobs were used to show the type of work, as well as working conditions. A special recruiting office was opened in the local town hall and applicants were reimbursed for loss of wages as well as travelling expenses. This firm also held out the offer of guaranteed wages as well as the possibility of the transfer of seniority from previous employment. On the whole, however, there was little evidence, in these case-studies, of employers seeking a way out of their employment difficulties by bidding up wages or conditions in this way.

In this section we have reviewed the general problems which arise in the context of expanding or contracting the labour force. In the next section we turn to a detailed review of the methods which may be used when the object is to reduce the labour force.

## Section 6

## QUANTITATIVE ASPECTS OF MANPOWER ADJUSTMENTS

### (ii) Problems of Reduction

There are two general areas of study in this section. The first is concerned with methods of reducing the labour force without dismissals and the second with the measures required for handling dismissals where they do occur.

### Methods of reducing the labour force without dismissals

In less than half the cases where labour force reduction took place, were dismissals of permanent employees involved. If we include the five organisations which made use of, and dismissed, temporary employees the total is still only thirteen out of twenty. Even where there were dismissals, other techniques were also used to minimise their number. These techniques have been well documented and the purpose of this discussion is to illustrate their use in a concrete setting (1). There are three main ways of absorbing reduced labour requirements. These are by attrition or wastage, by a reduction in working hours or other work-sharing devices, and by transfers of labour. Each of these will be examined in turn.

#### (i) Attrition

Any firm or organisation loses workers as a result of death, retirements or voluntary leaving. If no steps are taken to replace these losses the labour force diminishes. It was noticeable that in all the OECD case studies, where a reduction in the labour force was required, it was taken for granted that recruitment would be stopped and that this wastage would be allowed to have its effect. It is only in rare cases however that there can be a neat dove-tailing of the rate of wastage and the rate at which it is wished to reduce the labour force. Shultz and Weber quote the example of the Kaiser Steel Corporation of the United States where an 8 per cent wastage rate provided the right rate of rundown to deal with the labour saving resulting from the new methods of production (1). The nearest parallel among the OECD case-studies was the German pension department which introduced automatic data processing. The large proportion of the labour force approaching retirement age was one of the factors which influenced the decision to instal a computer. It was calculated that in two and a half years 111 retirements could be expected. In fact I07 posts were vacated and not refilled and in the next year another I23 posts were vacated, a total reduction of one fifth of the pre-conversion manpower, which met the requirements for labour saving.

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(1) See for instance R. Beaumont and R. Helfgott 1964 op. cit., Chapter III and G.P. Shultz and A.R. Weber 1966 op. cit. Chapter II.

Wastage rates are strongly influenced by the age and sex structure of the existing labour force. An old labour force will tend to have a high wastage rate, but so too will a very young one. Voluntary leaving of jobs is known to be greatest in the early twenties and then to decline (2). Wastage rates are also higher among women than men. One of the reasons why the manpower consequences of office automation have been less serious than might have been expected is because much of the labour affected has been female (3). The Swedish Postal Savings Bank found that the biggest impact of automatic data processing was upon the book-keeping section. But this was where turnover was highest because the labour force was young and contained a high proportion of women. The Swedish telephone system found the fact that they employed a large number of women was an advantage because the number of employees could be run down fairly rapidly by ceasing to recruit.

The element of wastage arising from the age and sex structure of the labour force can be forecast with some accuracy. There is, in addition, a fluctuating element which will depend upon such things as the general economic environment of the firm and the morale of the workers. This is much more difficult to forecast accurately although the British coal industry was reasonably optimistic about their ability to do so:-

"The comparatively high wastage rate within the industry (about IO per cent per annum on average) is a factor in the Boards favour. Certain types of wastage can be closely forecast, e.g. from deaths, retirements, accidents etc. and an attempt can be made from past experiences to forecast voluntary wastage which, although beyond our control, can usually be related to such factors as local economic conditions, past and future prospects and the availability of alternative employment". This was a nationalised industry, which felt under an obligation to administer its manpower adjustments in such a way as to take serious account of its social responsibilities. It was not therefore bound to keep to a very precise timing of its rundown and errors of forecasting were not disastrous.

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(1) G.P. Shultz and A.R. Weber I966, op. cit., p.22

(2) Wages and Labour Mobility, OECD, Paris, I965. p.55

(3) W.H. Scott, I965 op. cit. p.93-4
Computers in Offices Ministry of Labour, Manpower Studies No 4, H.M.S.O. London I965 p.37-38.

Change itself is one of the factors influencing workers' morale, and hence wastage rates. There may be doubts, not only about future security of employment, but also about the effects of change upon promotion prospects. As we noted in section 4 turnover rates may then rise when change is announced and upset calculations. But wastage rates may also be influenced artificially. A common way of doing this is by inducing some of the work force to leave at an earlier age than normal (1). This is a device most readily available to firms with their own pension schemes because, for them, it is possible to provide some financial incentive to their workers to retire early. There are four important examples of the use of early retirement among the OECD case-studies. The French hosiery and knit-wear firm reduced the age at which a pension could be taken from 60 to 50. The coal industry in Britain had a normal retirement age of 65. But immediate pensions were made available to men of 60 and over who had at least IO years qualifying service in the pension scheme. In the United States Internal Revenue Service we find that older employees with many years of service, whose jobs were eliminated had the alternative of "discontinued service" retirement, instead of transfer. To be eligible for these benefits employees must have had at least 25 years service, or be 50 years or over and have 20 years'service. The annuities paid in this way were reduced for employees under 60. The United States oil company induced 1,139 employees, out of a total labour force reduction of just over 3,000, to accept early retirement by offering a substantial "age allowance" separation payment in addition to regular severance pay and an annuity.

It appears that schemes of early retirement are much more widespread in the United States than in Europe, and that in the United States the trade unions are actively involved in negotiating early retirement clauses in collective agreements. The Armour Company is reported to have agreed with the unions alternative retirement options including one which allowed for the payment of a special retirement benefit to workers, displaced as a result of plant or major department closure, who were 55 or over and had 20 years service. The benefit was one and one half times the normal retirement benefit and continued until the worker reached age 62 or became eligible for Federal Social Security benefit (whichever was the earlier), when the benefit from the Company returned to normal level (1). It is now reported that pressure is developing to induce wastage or attrition through early retirement before the actual occurence of major technical change. To achieve this, unions are seeking to negotiate retirement at full benefit at age 62 instead of 65 (2). Provisions of any kind to induce early retirement, can be costly for the employer and it is not always clear that they are altogether socially desirable (3). From the viewpoint of many managements and workers, however, induced attrition is attractive because it is a relatively easy way of solving the problem of who is to lose his job.

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(1) Compulsory retirement of those still in employment over pensionable age is here regarded as dismissal, although it is a border-line case. The fact that some of the work force are still in employment after normal retirement age (which will usually be the age at which a government pension becomes payable) often reflects what has been a labour shortage in the past. It is unlikely to occur when the company or organisation itself has a universal pension scheme since a condition of membership of such schemes is often compulsory retirement at a fixed age. Both the British coal industry and the cotton firm dismissed workers over the age of 65 as part of their labour run down. In most situations there will be relatively few such workers. Selecting them for dismissal usually appears just, to both management and workers.

Yet another method for inducing attrition or voluntary leaving is to allow workers to leave before their scheduled date of notice, but without sacrificing any rights they may have to severance pay. It could be argued that this is not voluntary leaving because the workers concerned know that they will be dismissed eventually. But it has the advantage from the workers point of view of allowing him to go as soon as he has fixed himself up with another job. The method was used very effectively in the British Railways Workshop rundown. The plan of closures over a five year period was published in full. A general warning was given not less than six months before, about the date at which a particular workshop would be closed. Individual workers then received personal notice of not less than six weeks (often longer) of the date at which their employment would end. Originally the redundancy agreement specified how far in advance of receiving personal notice a man could leave and still not forfeit his entitlement to a lump sum compensation. The periods specified were much longer for the older men because of the difficulty it was expected they would have in finding other jobs. In practice there was considerable relaxation of these conditions for the payment of the lump sum. After an initial period when there was some doubt in the mens' minds about whether the plan would be operated in its full severity, leaving speeded up and nearly half of the total reduction was achieved by men going before their personal notice had expired. In doing so, however, they did not, in general, forfeit their right to lump sum compensation from the Board (4).

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(1) G. Shultz and A. Weber, I966, op. cit., p.9I.

(2) G. Shultz and A. Weber I966, op. cit., p.24. Federal Social Security benefits which are normally available at age 65 became available on an actuarily reduced basis at age 62, in I962.

(3) See discussion below section IO p. 109.

(4) D. Wedderburn, I965, op. cit., p.28-32 and I64-I65.

A rather special case of induced attrition is one where a company offers severance payment to anyone who volunteers to go. The Hoover Company in Britain had, for a year, relied upon natural wastage to reduce its labour force. But this proved insufficient and the volunteer system was resorted to. Reviewing their experience, the company argued that the total reduction of 20 per cent of the labour force in seven weeks, could have been accomplished more quickly had the firm issued formal notice of dismissal. But, they argued, such action might well have had a very bad effect upon industrial relations in an area where memories of heavy unemployment in the inter-war period were still much alive (1).

One feature of the Hoover labour force which made it possible to use this kind of induced attrition, however, was that it was non-specialised, and workers who remained could be easily moved to fill the places of those who went. A serious disadvantage of the use of both natural and induced attrition is that management cannot control the composition of the remaining labour force. It may therefore be a device of limited usefulness in a situation where, not only is there to be a reduction in the size of the labour force, but also a major shift in the composition of the labour force. Nor is it such a useful device if whole plants have to be closed. The Railway Unions in Britain based their opposition to the Workshop Plan partly on the argument that, although they recognised that a reduction in the scale of activities was inevitable, in their view it could be achieved by natural wastage particularly in view of the fact that the average age of the workshop labour force was high. An essential feature of the economies of the plan, however, was the concentration of activities on the most modern and geographically best-located workshops, and this of necessity involved some complete closures (2). To have relied upon natural wastage in such a situation would have meant considerable geographical movement for the remaining labour force, from closing to ongoing workshops. In addition overhead costs would have been increased as a result of keeping the Workshops open long enough for attrition to take place.

The earlier decisions about changes are taken, however, and the sooner new recruitment is stopped the more useful attrition can be. Moreover the case-studies provide interesting examples of how the enterprises can, by careful planning, use other measures to extend the period over which wastage can operate. If construction and installation of machinery is involved, the use of the company's own labour for these tasks is one such method. Another is to operate with a smaller than desirable workforce for an interim period by the use of overtime etc., so that when the time for reduction comes it is within the bounds of possibility by using attrition. Both of the studies of manual to dial conversion in the telecommunications industry used elaborate devices to avoid new recruitment, and yet meet the current workload satisfactorily. These included the postponing of leave until after the conversion had taken place and the extensive use of overtime in the pre-conversion period.

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(1) Financial Times, London, 9th October, I956.

(2) D. Wedderburn, I965, op.cit., p.25.

### (ii) Reduction in the hours of work

Among all the OECD case studies there is only one example of an organisation adjusting working hours in order to contribute to the solution of a rundown problem. This was the coal industry which cut out Saturday work, a shift which was, in any case, very unpopular with the miners. The union proposed reduced working hours to the United States oil refinery but here management refused to consider the idea. This is a traditional management position. Short-time working is suggested as a way of avoiding dismissals by the workers' representatives, but is opposed on grounds of cost by management (1). It is important, however, to distinguish between short and long term reductions in activity. As a solution to what is seen to be a temporary recession in demand, shorter hours or working less than a full week may recommend itself because it keeps a labour force, which may ultimately be required, together. But it is clearly unattractive as a way of dealing with permanent change.

### (iii) Transfers

Whether the transfer of labour is to be regarded as a device for avoiding or for handling a reduction in the labour force depends upon the unit of organisation which is being studied. If we are looking at a whole industry, such as the British coal industry for example, then transfers from one pit to another are a way of avoiding a labour force reduction. From the point of view of the pit losing labour they are a way of handling the reduction. An important part of manpower planning in the OECD case-studies was the examination of the total manpower requirements of the organisation on as wide a basis as possible. This showed what jobs were available to which displaced labour could be transferred. These jobs might be in other departments, in other units of the organisation or in other associated companies. The details of how the transfers were organised in terms of training required, and the problems of geographical movement will be studied in the next section.

We find that geographical transfer was widely used in the case of old plants closing down and new ones being started up. Examples are provided by the Swedish shipyard, the Austrian rolling mill and the Norwegian chemical firms, all of which moved location and wished to transfer employees from the old to the new site. The Postal Bank of Sweden and the United States Internal Revenue service were able to reassign some of their displaced employees to jobs with other departments. The firm concerned with the distribution of liquid gas and the oil company were able to offer transfer to associated companies.

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(1) See the reaction of Trade Unions in Britain to current threats of redundancies. Daily Telegraph, London 26th August, 1966; The Times, London 15th September 1966.

As we have already noted, transfer was also an important feature of handling the manpower problems of the gas industry in France.

## Handling dismissals

But when all these devices had been used, dismissals did occur in some of the case-studies. What, if any, procedures were then used by the enterprise to facilitate the transition of the redundant workers to the labour market? Since there are so few examples of dismissals among the case-studies we can only usefully examine them in the context of a consideration of general practice (1). This is, in fact, an area where there have been a number of major developments in many countries in the post-war period. There are four aspects to be considered, the principles governing the selection of workers for dismissal, the length of notice of dismissal, the help given with finding new jobs and financial compensation.

The OECD case-studies reveal some elements of disagreement between management and workers about the principles to be used for the selection of redundant workers. Managements generally started on the basis of using the seniority principle, or last in first out, but wished to be free to depart from this in the light of their own requirements. The Swedish rolling mill for instance, wished to keep people with less seniority but with special skills. One of the Norwegian chemical concerns provides an example of a management which showed a considerable amount of concern for individual workers, studying each case in terms of hardship involved, and this among other things, led to deviations from the seniority principle, despite strong opposition from the trade unions. In the dyestuffs firm no one with over I5 years of service was dismissed, but below this the seniority principle was applied and, in the United States oil company plant-wide seniority was operated.

There was one example of some difficulty arising from the need to define the unit within which the seniority principle should operate. The amalgamation of two units of the second of the Norwegian chemical concerns, led to dispute between the workers about whether the seniority principle was to be applied to the two plants together, or separately. The seniority unit often depends upon local custom and practice. In the railway workshops in Britain the redundancy agreement specified that the "men shall be declared redundant in accordance with the practice operating at the redundancy point concerned", the redundancy point being in most cases the individual workshop. The seniority principle was accepted at these points, but in some workshops this meant seniority within grades of skill, while in others it operated across the whole workshop (2).

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(1) Moreover not all of the studies involving dismissals give the necessary information, notably the French hosiery and knitwear and the Swedish rolling mill.

(2) D. Wedderburn, I965, op. cit., p. 30.

Shultz and Weber indicate that there are tendencies in the United States to broaden seniority units. They quote the example of the 1964 contract between the United Mine Workers and the bituminous coal operators which established mine-wide seniority units. On the other hand they report that "interplant bumping rights", where men with greater seniority in one plant can displace workers in another plant, rarely figure in collective agreements in the United States(1).

The seniority principle certainly protects the position of the older worker who is likely to have the greatest difficulty in getting another job. In some cases management also favours it because it retains experienced workers. On the other hand it can produce difficulties in the future by leaving a workforce with an unbalanced age distribution. The seniority basis can be seen to be fair and may help to avoid any suggestion of victimisation of militant workers. It is interesting to note that in one of the Norwegian case-studies the final list included the names of all the representatives of the workers which may well have contributed to the trade unions opposition to the departure from the seniority principle. On the other hand, there is also evidence that certain bases of selection other than seniority are acceptable. We have already commented upon the principle of dismissing workers over normal retirement age, as in the British cotton firm. In one of the Norwegian firms the workers put forward the proposal, which was not accepted by management, that where a man and his wife were both employed, the wife should be dismissed(2).

One great advantage of manpower planning emerges from the case-studies. It is that even the most elementary form of planning seems to be associated with periods of notice of impending dismissal longer than is customary for manual workers. The events described in the case-studies were taking place at a time when minimum periods of notice were statutorily required in most West European countries but not in Britain. Britain was an exception to this practice until the Contracts of Employment Act 1963 was passed. There is still no legal regulation of this matter in North America. But whether legally regulated, dependent upon the common law interpretation of the contract of employment or governed by collective agreements, the normal period of notice for manual workers has varied between a week and a month and for salaried employees between a month and three months(3). These of course relate to periods of notice for the individual worker which are sometimes the same as, and sometimes shorter than general notice of the firm's intention.

As an illustration of the extremes of general notice we may quote the British Motor Corporation who, in 1956, gave two days notice of their intention to dismiss 6,000 workers(1). At the other extreme Weber reports that three years notice of shut down was given by the International Harvester Company to the United Automobile Workers(2). Not all the OECD case-studies gave information on the point, but the preferred period of notice appeared to be three months. The United States oil company was said to have given notice to the men concerned as early as possible, but not less than three months in advance. The dyestuffs company gave three months notice. One of the Norwegian chemical companies gave one month's personal notice but published the list of names of the men to be dismissed six months in advance.

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(1) G.P. Shultz and A. Weber, 1966, op. cit., p. 27-33.

(2) This is sometimes advanced in a more general form, that married women whose husbands are in employment anywhere should be the first to go. See for instance a report of redundancies at the British firm of I.C.I. Daily Telegraph London, 26th August, 1966. See also the views of a sample of workers on methods for selecting for dismissal in H. Kahn 1964, op. cit., p. 213-225.

(3) For Europe see L. Francois "La Distinction entre Employés et Ouvriers en Droit allemand, belge, français et italien" Faculté de Droit, Liège 1963.

Longer periods of notice are likely to be easier to give in those situations where the type of change itself will take time, or can be allowed to take time. In other words change undertaken in response to a contraction of demand (our first type of change in section 2), or where market competition is very fierce, will produce a situation where the organisation has less room to manoeuvre.

When the worker comes to leave his employment the case-studies would suggest that increasingly his employer feels some responsibility for assisting him into another job. In fact this reflects the serious limitations in the effectiveness of the public employment agencies in most countries. This is discussed in another OECD report(3). In part, it is a logical development of the transfer policy. It is but a short step from concern to place workers with associated companies to placing them with other firms operating in the same area, or known to be requiring skills which are about to be released by redundancy. The Norwegian chemical concern assisted their workers to such jobs through the public employment agency and the dyestuffs company also facilitated contact with the Ministry of Labour employment exchange. The dyestuffs company contacted the employers association to which it belonged to explore possible demand for labour. But it was the oil company in the United States which developed the most elaborate programme, amounting almost to the setting up of its own private employment agency, and transmitting information about the qualifications of employees to be displaced to more than 600 employers in the area. Altogether the refinery management estimated that one third of the total number of men displaced found jobs through the help of the outside job placement programme.

Training for outside jobs should also logically be considered under this general heading of assistance with outside jobs. Most training programmes are concerned with re-equipping workers for jobs in the same concern. As such we shall be discussing them in the next section which deals with the qualitative aspects of manpower adjustment. But there are a few examples of companies providing training programmes for outside work. Among the OECD case-studies there is the company concerned with the distribution of liquid gas in France and the United States Federal Internal Revenue Service. A large-scale programme of retraining of this kind was also undertaken by the Armour Foundation Automation Fund Committee, to help displaced workers. The limitation and successes of this programme are discussed in detail by Shultz and Weber. But one important point should be noted(1). In the OECD examples the retraining took place while the workers were still in the employment of their old employer and were receiving their old, or very nearly their old rates of pay. In the Armour case, however, serious problems arose in providing financial support for the workers undergoing retraining. This is a general point to which we shall return in the next section.

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(1) It is interesting to see how far legislation i.e. the Contracts of Employment Act and the general change in the climate of opinion have changed practices. In September 1966 the same company gave three weeks notice of impending dismissals.

(2) A.R. Weber, in the Requirements of Automated Jobs op.cit., P.209.

(3) Irvin Sobel and Richard C. Wilcock. Placement Techniques OECD Paris 1966. Section IV p. 31.

Finally there is the question of financial compensation to dismissed workers. Since the time at which the case-studies were prepared, the United Kingdom finds herself in the unique position of being the only one of the countries co-operating in this study, where statute now requires the payment by an employer of compensation to a worker dismissed as a result of redundancy(2). Such payments have become quite common features of collective agreements in the United States, and there have been interesting developments elsewhere e.g. Sweden(3). But in general the acceptance of this kind of responsibility by employers has been very uneven. Among the OECD case-studies we find that the three British examples which involved dismissals all included some form of severance pay. In the cotton industry severance payments dependent upon the age of the worker were available under the Cotton Industry Reorganisation Act, 1959. Under the National Coal Board's Redundancy Compensation Scheme weekly compensation payments were made for up to 26 weeks, for men below the age of 60. In addition lump sums were paid to men aged 51 and over. The dyestuffs firm compensated its dismissed men with one week's pay for each year of service. The Norwegian concern gave everyone a week's pay and undertook to pay a percentage of average wages which varied according to the tax class of the individual for so long as he remained unemployed. In the event however, this provision was not used because the men had all found jobs. Severance payments were also available in the United States' case-studies. The telecommunication industry was cited as an example of a guarantee of no dismissals. But "in extremis" dismissals were anticipated in the collective agreement and there was provision for severance pay written into it. It provided for "lay off" allowances ranging from 1 week's pay for regular employees with 1 year's service to 30 weeks' basic pay for 15 years. The United States oil company also provided severance allowances.

## Conclusions

The review of the case-studies in this, and the preceding section shows that change by no means always means dismissals. If market and general demand conditions are right, as they may well be, because frequently they are a stimulus to change, then an expansion of the labour force may be required. This presents its own planning problems. But companies which attempt, in however primitive a fashion, to plan their manpower requirements may find that dismissals can be avoided through the use of devices like attrition and transfers. When dismissals do occur, the responsible managements will become involved in extensive programmes for easing the path of their workers to new jobs and for cushioning the financial effects of redundancy.

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(1) G. Shultz and A. Weber 1966 op. cit. Chapter 6.

(2) See above section 4 p. 45-6. (3) See section 1 p. 16.

## Section 7

## THE QUALITATIVE ASPECTS OF MANPOWER ADJUSTMENTS

### (i) Changes in job content; training and retraining

In Sections 5 and 6 we were examining the methods available to the enterprise for ensuring that the required number of workers was arrived at. Here, we shall be concerned with the methods available for ensuring that these workers are of the right quality and are available at the right time and in the right geographical location. In other words, we shall examine the qualitative aspects of manpower adjustments.

### Changes in job content

As we saw in Section 4, one of the most difficult aspects of the manpower planning operation was constructing the manpower balance sheet in terms of quality. A priori, it might be argued that there are two types of change which are least likely to involve qualitative changes in job content. Using the typology of Section 2, the first would be simple expansion or contraction of output using the same type of technology and the same balance of skills. But even here problems of matching available manpower against the job requirements arise. If, for instance, the firm is concerned to expand it may have no difficulty in specifying the type of labour required, but it may well have difficulty in recruiting labour with the necessary experience or qualifications. Again as we saw in the previous section, a case of contraction, may be dealt with by transfer of labour within the organisation and this may require retraining and hence change in job content for the individual worker. The second type of change, where few qualitative changes might be expected, would be administrative change which consisted primarily of change in the location at which the activities of the enterprise were to be carried out. Once again, however, labour displacement might well mean change for individuals, even though the overall balance of occupations in the enterprises was unaffected. So we find that nearly all the OECD case studies provide some examples of the problems of handling changes in job content.

These studies were not prepared with a view to casting light upon the much discussed issue of whether technological advance is making for a different profile of skill requirements and whether it is making for overall higher or lower skill requirements. Illustrations are to be found among them of changes in the types of skill required such as have been described by other investigators(1). Examples are provided by the case-studies of automatic and semi-automatic controls in steel making (see for instance the Swedish and British studies) which involved a shift from manual to conceptual skills. Many of the automatic data processing and the administrative reorganisation studies revealed trends towards a reduction in the frequency with which labour was required to perform purely routine operations; but at the other end of the scale there appeared to be a reduction in the number of jobs requiring discretionary decision making skills. Examples are provided by the German pension department, and the Swedish warehouse(2). After reorganisation there was an increase in the relative number of middle level posts in the Norwegian customs service but a reduction in the number of the most senior posts. As in the case of changes in the number of workers required, it would be dangerous to attribute all these changes in types and levels of skill to technical change. Apart from the fact that the pre-change situation may not have been an optimum one, we have to work with descriptions of types of activity and of skill requirements which may no longer match the actual requirements of the old job and may well be irrelevant for the new technology(3).

The type of change in job content which involved change for the individual worker, rather than necessarily changing the range of occupations in the enterprise is well-illustrated by the French gas industry. The technical change involved concentration in larger units as well as reduced manpower requirements for making a given quantity of gas. Workers moved from being producers of gas to become meter readers and maintenance men for domestic appliances. The extent to which changes of this kind can take place within the enterprise can be fortuitous, in that it will depend upon the precise economic organisation of the enterprise and how wide a range of activities it controls directly or through associated companies.

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(1) See for instance E.R.F.W. Crossman, "European Experience with the Changing Nature of Jobs due to Automation" in _The Requirements of Automated Jobs._ op. cit. p. 161.
D. Limon. Repercussions du Progrès Technique sur le Niveau de Qualification des Ouvriers Professionels de l'Automobile in _Cahiers d'Etude des Sociétés Industrielles et de l'Automation_ No. 7 Editions du Centre National de la Recherche Scientifique. Paris 1965, page 137.

(2) This may appear to be in contradiction to the conclusion of W. Scott, OECD 1965 op. cit. p. 95. But our examples of automatic data processing all took place in organisations where clerical work was to a large extent already routinised and simplified and, sometimes, even mechanised.

(3) For an interesting discussion of the dangers of an historical approach to changing occupational profiles and a plea for the development of sharper, more precise, instruments of analysis see the contribution from Louis E. Davis to the discussion on the paper by E.R.F.W. Crossman, 1965 op. cit. 191.

In the second type of change in job content the worker is involved in the same process, with the same objective but uses a different method. We find illustrations in the shift from mule to ring spinning, in the new method of flow production in the Swedish shipyard and in the automatic data processing studies. Two trends stand out from these changes. The first was that less physical effort was required, as one would expect from increased mechanisation and use of more handling aids. Examples are steel and rubber hose. The second was more monitoring of controls, as in oil refinery and paper-making. One feature of these types of change, which is not strictly relevant to manpower planning, should be commented upon. The new technology generally brought improved working conditions for production workers. Naturally where a new factory had to be built, higher standards tended to be adopted, but even where it was not, improved lay-out seemed to contribute to lighter and airier conditions. These improvements can be important in obtaining more rapid acceptance of change by the workers involved.

A trend almost in a category of its own because it may result in switches of individual workers from one type of job to another as well as change in the occupational profiles of the enterprise, is the breaking down of the rigid division between process or production, and maintenance. The two types of activity are essential to one another, to a certain extent occur in the same physical setting, but are often traditionally organised quite separately. Technical change may result in the need for transfer between the two activities because the enterprise uses a particular method for reducing its labour force. For instance, the United States oil refinery applied the principle of seniority when deciding who should be dismissed. But this left them with a disproportionate number of maintenance workers because senior employees traditionally sought such jobs, in order to avoid the shiftwork involved in process operations. Men from mechanical crafts such as pipefitting and carpentry became refinery unit operators and laboratory technicians. Another type of shift was involved when the German rolling mill used the opportunity of technical change to overhaul its maintenance system and adopt routine replacement, so that maintenance could then be undertaken by the semi-skilled.

In a study of automation in the electricity generating industry in the United States the authors report that one consequence of technical change was to break down the traditional division between craft and non-craft jobs(1). In the United Kingdom there have been examples of advanced technology, particularly in continuous process industries leading to the same sort of changes(1). The main shift is towards the process worker himself carrying out some of the simpler maintenance operations as illustrated by the company distributing liquified gas in France.

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(1) F. C. Mann and L.R. Hoffman 1960 op. cit. p. 49.

Some of these changes in job content were considerable, but they did not appear to present insuperable problems given the great willingness of the organisations to embark on training and retraining programmes. We turn now to consider these efforts but in doing so the reader should bear in mind that in certain countries, the United Kingdom, Germany, France and most areas of Sweden, technical change was taking place against the background of a general shortage of labour. There were strong pressures, therefore, for employers to make as much use as possible of the labour they had because the recruitment of labour with the necessary skills would be so difficult.

## The use of training and retraining

The OECD case-studies suggest that training and retraining are essential weapons for successful manpower planning. This activity played a major role in the programmes of 19 of the case-studies, and a less important role in many more. There was considerable variation in the scale of the effort. The United States oil company retrained 889 workers over the course of its six year programme of technical change; the French gas industry 2,000 workers in an even shorter period. In both cases this was about a sixth of the original labour force. The hosiery and knitwear firm, on the other hand, was concerned with the retraining of only a few dozen workers. But in all organisations there was strong emphasis upon developing or using their own training programme. This was in part due to the fact that not all of the countries had publicly financed and operated training programmes at this time. Where they did exist there were limitation upon who could use them. In the United Kingdom, for instance, it is given to the unemployed, to the unskilled and to those whose skill has become redundant. In Sweden, everybody has the right to attend ordinary training courses, but the Government only pays if the individual is unemployed. The company concerned with the distribution of liquified gas in France tried to use outside training centres to get some of its employees trained to be skilled workers. Such centres only accepted recruits after examinations and in limited numbers with the result that, in three years, the firm was able to train only 14 mechanics, a number totally inadequate for its requirements. It therefore developed its own training programme.

In some cases the development of training involved the company in such a major extension of effort that it could be said to be initiating training. In others the company or organisation already had a large scale training programme which could simply be extended in particular directions. The Swedish shipyard ran extensive general internal courses in work supervision for those who wished to become foremen, as well as giving support to those of the workers who acquired theoretical training elsewhere. There was also a permanent "industrial school". The workers who transferred from the old to the new shipyard did not then have to undergo any extensive retraining because most of them had been recruited from this school and their theoretical basis was good. At least half of the newly recruited workers who were needed for the shipyard were also sent to this school. Two special training exercises were engaged in, however, which arose out of the specific requirements of the new yard. The first was the provision of training in job evaluation and M.T.M. (Methods Time Measurement) in order to ensure that there was at least one worker in each department who understood M.T.M. The second was training in order to induce workers to give up old work habits. For instance, a course was run for acetylene cutting operators who had previously worked by hand, in order to get them to use hand cutting machines and speed regulating devices.

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(1) See Manpower Utilisation Agreement signed by I.C.I. and the relevant Trade Unions, London, October 1965.

The British steel firm provided another example of a company with a well established programme of training which could be readily extended to cope with the greatly increased demands being made upon it. Almost as soon as the decision to embark upon the redevelopment scheme had been taken, the company expanded its intake into its apprentice training school, because it foresaw demand for more skilled labour. In addition, the existing training staff worked out special programmes with the production and maintenance management for those workers who would be concerned with the new types of process. Training programmes for electric arc and Kaldo furnacemen were developed.

In all of the case-studies concerned with conversion to automatic data processing retraining was needed. In most of them these programmes were also carried out within the companies and organisations concerned, but often with the aid of the computer manufacturers. An interesting example of the different levels of training required is supplied by the conversion in the United States Internal Revenue Service. A three man group was set up centrally in Washington to be responsible for the co-ordination and planning of programmes. First there were voluntary programmes where instruction was provided by the government but where the actual training was carried out outside office hours. This involved training in typing and secretarial skills. After individuals had completed these courses they were often given temporary assignments which enabled the administration to assess their new capacity and see how far they could be utilised within the organisation. But this was also training which would enable transfer to be made to other departments, or in some cases as we have seen, to other jobs altogether outside the government service. Second there were programmes for training systems - analysts and programmers, who would take up duties on the new installation. All new computer installations had need for such specialist labour and it is in these case-studies, particularly, that reference is made to the decision to train existing staff because of the shortage of supply outside.

The case-study of the leak tightness inspection unit of the Atomic Energy Commission is, in essence a training story. The company was starting from scratch in a new industry. Two other French case-studies also involved major retraining programmes, the nationalised gas industry and the distribution of liquified gas. The second of these is perhaps particularly interesting because the workers displaced, as a result of the reduction in the number of filling centres and the higher degree of mechanisation, were mainly operatives. We have already noted that part of the training programme involved equipping the men as skilled operators able to do some maintenance jobs(1). There was also some training of unskilled workers for skilled places with other companies of the group. Perhaps of even greater interest there were also courses to train selected operatives to become office workers and salesmen.

All of these programmes involved training which sometimes lasted weeks or sometimes months. At the other extreme there were examples of on the job training only, as in the dyestuffs and hosepipe firm. There was even the handing out of written instructions, as in the Norwegian customs service, although these were supplemented by a course for Norwegian customs men who were to handle Swedish posts, and vice versa.

The importance of taking early decisions about the retraining required is well illustrated by the case studies. In all but simple on-the-job training the organisation had to see that instructors were available, that the capacity of the training organisation was adequate, and allow the full length of time for the programme. We have already referred to one example where early decisions to recruit apprentices were helpful. The converse situation prevailed in the German engineering concern. Although an apprentice school existed, not only was not enough use made of it (partly as we saw in Section 4 because of the mistaken assumption that skill requirements of the labour force would drop) but there was also failure to take the necessary steps to retain the newly trained men with the enterprise. The Swedish paper container factory also ran into problems of timing. Most of the newly recruited workers were former forestry workers or from the pulp mill, and only a minority had experience of paper-making. They therefore had first to undergo a general course in paper-making, followed by visits and practical training in the neighbourhood. In order to start production on time, however, the period of practical training had to be cut short.

One interesting feature of the handling of job changes is the methods used for the selection of workers, either to be transferred or retrained. In some cases this was simply done on the basis of assessment by the immediate superior. The dyestuffs company stated their policy as one designed "to select the best man for the job having due regard to age and adaptability. At the same time the company had in mind the age structure of its future labour force". In the cotton mill selection was carried out by supervisors "who by close and intimate contact with the workers concerned were able to identify the personal qualities necessary for the job". The German paper-making firm, on the other hand, arranged for participation in its training courses to be optional. It was found that while foremen, assistant foremen and first assistants volunteered for the training none of the paper-makers did so. The latter were therefore instructed, in turn, on the "job" on the new machine itself.

Increasingly it appeared, however, that more formal selection methods were being used. In particular, some kind of psychological testing was common. Combined with tests of formal educational attainment, psychological tests were used for recruitment in the leak tightness inspection operation. They were also used by the company concerned with the distribution of liquified gas, the German and the Swedish rolling mills and the Swedish paper-container factory. The oil company selected for retraining on the basis of experience and ability to pass written tests. A series of selection steps were used in the Internal Revenue Service for the identification of people for training as programmers. Applicants were first required to pass an examination and an aptitude test. Those who passed this hurdle were personally evaluated on the basis of past record and interview and finally an overall rating was given. The voluntary training programme in general accounting and income tax law was open to all comers, however, and it was criticised by the supervisors on the grounds that people with unsuitable qualifications too often attempted the course. On the other hand the overall assessment was that there had been few drop-outs, and as a programme designed to increse the individual chances of re-employment in the service it had been a success.

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(1) See above this section p. 74

## Methods of training

There was much variety in the methods used for training and retraining. Who gave the instruction, over what period, whether training was given in the classroom or on the job, depended upon the nature of the job change and upon the resources of the enterprise. As one might expect, companies with permanent training schemes tended to use formal instructors and to engage in special training of instructors for the specific technical change. Others relied on foremen and supervisors or other operatives. The technical director of the firm supplying the machinery for the German paper-making firm was responsible for conducting the training course.

Of considerable interest is the evidence provided by the case-studies of the extension in the use made of visual and electronic aids for training. The United States oil company reported enthusiastically on the use of simulated models and programmed learning. One such device was an instrument control trainer operated in conjunction with an analogue computer. When the trainee manipulated the control he obtained the same response as would appear if he were operating the plant. The telephone companies used simulated switchboards for training purposes and the British steel company built a full size simulation of the Kaldo steel making control console, which eventually led to a modification of the design of the real console. Another marked feature of the training methods was the number of visits arranged, particularly for supervisors but also for operatives, to other enterprises already using the techniques to be adopted.

There is no material from which we can assess the effectiveness of particular training methods. A single example of criticism is provided by the suggestion that some of the training provided by the Internal Revenue Service contained too much classroom work. Other studies have suggested that on the job training may have disadvantages because operatives resent being required to show other men how to do the job. In some situations, too, on the job training may not give experience of a wide range of events quickly enough. Particularly in continuous flow operations it is important for the operatives to have practical, as distinct, from theoretical experience of dealing with a breakdown situation if difficulties and strains on the worker are to be avoided. Yet it may be a long time befour such a breakdown occurs in real life(1).

To summarise the experience with training, the case-studies suggest that there is now a widespread acceptance of training and retraining as essential weapons in the armoury for handling change. At the same time there was much empiricism in the approach to the methods used, and little critical evaluation of their appropriateness. The impression given is that workers who were selected, successfully completed their programmes. There may be two reasons which help to account for this. First, training within the enterprise usually carried with it a guarantee of average earnings, based upon past earnings experience, during the training period. In some cases, like the liquified gas company in France, training was only given if the operative would guarantee his willingness to be geographically mobile. But at least the difficulties of persuading men to retrain when they have to accept a temporary drop in income, did not arise. Second, the men selected tended to be highly motivated because they were, in the main, retraining in order to keep a job. The only exceptions were the courses laid on to equip workers with skills to improve their chances in the outside market. Our general conclusion would, however, support that of Beaumont and Helfgott, that in relation to change in industry:

> "There are but little grounds for the concept that the technical skills needed are beyond the capacity of most experienced industrial craftsmen and workers to learn"(2).

## The older worker and change in job content

It is not the purpose of this report to discuss the impact of technological change upon the older worker. That older workers experience particular difficulty in finding new jobs if they are dismissed, is well documented(3). How far is manpower planning able to take account of the special problems of the older workers? We saw that where a labour force reduction took place, seniority was a common basis for selection for dismissal, and that this did something to protect the position of older workers as far as the retention of a job was concerned. But to what extent did changes in job content present special problems for the older workers, and how far was it possible for these to be dealt with? A particularly striking feature of the OECD case-studies is the light they throw upon the preconceptions of management about the adaptability of older workers.

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(1) F.C. Mann and L.R. Hoffman, op. cit. 1960., p. 94.

(2) R. Beaumont and R. Helfgott, 1964, op. cit., p. 134.

(3) See for instance D. Wedderburn, 1965, op. cit. p. 84 and 166, I. Sobel and R.C. Wilcock, 1966, op. cit. R. C. Wilcock and W. H. Franke, Unwanted Workers, Free Press of Glencoe, 1963.

In the French hosiery firm, and the British dyestuffs and cotton firms, it was automatically assumed that age meant less flexibility. The dyestuffs firm said "it is clear that some of the older workers were steeped in tradition and past practice. They were not so adaptable as workers in the lower age groups, moreover they were apprehensive about the new machinery with its high degree of instrumentation". In the Swedish rolling mill the decision was taken to invite applications for positions in the new mill from all the rolling mills of the company because of the high average age of the labour force in the mill which was to be closed. It was assumed that these older workers would be less adaptable.

But that age alone is not a reliable indicator of ability to adapt is well illustrated by this particular case-study. For, while an inverse correlation between age and the results of the psychological testing was found for workers in the mill which was closing, no such correlation between age and test results was found elsewhere. The suggested explanation was a difference in motivation between the two groups of older workers. The workers in the closing mill sought jobs in the new mill for fear of loosing a job altogether; workers in other mills sought jobs in the new mill because of increased promotion prospects or better working conditions. For the latter group desire for achievement outweighed age. Those older workers in this steel works who were not transferred to the new mill, nor dismissed, were transferred to other jobs in the company after a medical examination and after a bio-technical examination of all the less arduous jobs. The Austrian rolling mill is the only enterprise which did report directly that older workers experienced difficulty in handling the new processes and in some cases had to be transferred to other work.

Other case studies report success with the problems of transfer and retraining of older workers. The French nationalised gas industry stressed that there was no age limit for their retraining programme and appeared to experience no difficulty on account of age. The oil refinery reported cases of workers well over 50 being successfully retrained, and the rubber-hose company assumed that everything should be done to get older workers to transfer to the new jobs. On the one hand these were some of the most skilled and experienced employees whom the company did not wish to lose, and on the other hand much of the heavy physical work of the old jobs had gone as a result of increased mechanisation.

For the most part the phrase "older workers" referred to workers in their fifties and early sixties. Without much more detailed information about the kind of job changes involved, and the type and length of training offered it would be impossible to draw any conclusions about whether change can be handled satisfactorily from the viewpoint of such older workers. There is nothing in these studies, however, which would contradict the conclusions of R.M. Belbin. He argues that there is a close correlation between the ability of the older worker to learn and the methods of training used, and that given the appropriate methods, considerable progress can be made(1). There is evidence in the studies, however, that preconceived ideas on the part of management about the adaptability of older workers, played a large part in the final decision whether or not to attempt to transfer them and, therefore, in whether or not they were given the opportunity to retrain. Here is clearly an area where managements need to be more aware of the possibilities which research in the field of retraining has opened up.

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(1) R.M. Belbin, Training Methods, OEDC, Paris, 1965.

## Section 8

## QUALITATIVE ASPECTS OF MANPOWER ADJUSTMENTS

### (ii) - Wage and Salary Adjustment, Geographical Mobility, Shift Working

Changes in the type of jobs had consequences for manpower planning which went beyond the selection and training of workers to fill the new jobs. In this section we shall discuss three further, rather disparate, consequences. The first is the impact upon wages and salaries. The second is the impact upon the geographical location of activities and what this meant in terms of the mobility required of workers. The third is concerned with the increase in shift working.

### Consequential wage and salary adjustments

In view of the widespread changes in the job content and working conditions which we have described in earlier sections, it is not surprising to find that consequential wage and salary adjustments, whether foreseen or not by management, presented major problems. There were five main kinds of difficulty which arose. The first was the development of new piece-rate or bonus schemes when work was being done with new equipment, with all the attendant difficulties of forecasting what level of output would eventually be achieved as "normal". The second was the fixing of earnings levels for new types of jobs. The third was the fitting of both of these earlier types of change into an existing structure of piece-rates and earnings. The fourth was the problem which arose when traditional earnings patterns, established through say, the working of overtime, were disturbed by the changes. The fifth was the problem of using wage or salary increases as bribes to attract additional workers, or to ease the transfer of men; and vice versa the problems of transfer of individuals from higher to lower paid jobs.

An example of the first problem is provided by the hosiery and knitwear firm. Constant revision of piece-rates as the type of product changed was a source of considerable dissatisfaction among the workers. When a new range of products was introduced management might sometimes use the opportunity to cut rates. But when an attempt was made to move over to a system which was predominantly time rates, this system too presented difficulties. The best workers tended to leave because they found their earning power restricted and eventually a return was made to full piece-rates.

As for the second type of problem, we have seen that the Swedish shipyard, starting from scratch on a new site, with entirely new production methods, took the opportunity to introduce a new system of determining piece-work rates, M.T.M. Reference has already been made to the firm's policy of training representatives of the workers in the new method. The new system still engendered a considerable amount of suspicion among the workers because they feared a speed up. At the time of the case-study report, however, the results were deemed to be good but partly this was attributable to the granting of provisional supplements to maintain earnings. These were necessary to bridge the period until the whole system was functioning as smoothly as it should.

The third problem, that of fitting new piece-rate and bonus earnings into an existing wages structure, is illustrated by the Swedish rolling mill. New rates were negotiated in which management's objective was to fix the rates at such a level that the workers would be encouraged to reach maximum output as quickly as possible, at the same time not over-valuing the new jobs in relation to existing ones. It was agreed that between the completion of training and the decision about new piece-rates, workers should receive an hourly rate based upon job evaluation and which would correspond to 90 per cent of estimated final piece-rate earnings. Workers were guaranteed retroactive payments, which would be equal to the differences between these hourly rates and the eventual piece-rate earnings, in the first four weeks. The importance of encouraging workers to reach maximum output as quickly as possible turned on the fact that it was crucial to reduce handling time to a minimum so as to avoid unnecessary heat loss and to obtain the best rolling temperature. There was some divergence between the management's and workers' views about the eventual outcome as far as earnings levels were concerned. Management's conclusion was that workers who transferred to the new plant eventually achieved rather higher earnings than before. The workers' conclusion was that the "new plant was not one where money could be earned".

In the British steel firm wage rates for the three production departments - steel making, the primary mill and the strip mill - were negotiated with the trade union negotiating committees. In the first and last case agreement was reached at works level. In the case of the primary mill the matter was referred to arbitration. Subsequently, after operating experience, agreement was reached at works level to amend the arbitrator's award.

Many of the problems of fixing earnings levels for new types of job, and for relating these to existing wage structures led many firms to make use of systems of job evaluation. The United States oil refinery fixed hourly rates of pay on the basis of job evaluation. The German rolling mill, however, ran into difficulties. Management found that the high values for "responsibility, technical knowledge and mental or nervous tension could not fully compensate for the very low points values given for physical effort and the influence of the environment". These problems eventually led to a major modification of the job evaluation system as a whole.

The German paper-making concern illustrates the fourth and fifth problems. The change to continuous shift working reduced the old opportunities for overtime earnings. Under pressure from the workers the firm then granted a "weekly lump sum" compensation. At the same time, anticipating opposition to the extension of shift working, management also reduced working hours from 44 to 42 a week, and increased shift differentials and bonus payments. The total effect was to raise the individual worker's earnings by 15 per cent on average, while the total wage bill rose 25 per cent. This was compounded of the increase in the number of workers, the increase in individual earnings and a shift towards higher paid jobs.

The German engineering firm used wage increases to attempt to deal with their labour recruiting difficulties. Wages in the new plant were increased, and workers were offered a Christmas bonus as well as profit sharing which would depend, not only upon the profit performance of the firm, but also upon the individual workers "hard work and loyalty". A rather strange situation developed in the Swedish paper container factory. To attract recruits from outside the organisation, higher wages were offered than were paid to the redundant forestry workers, transferred within the organisation to the new factory.

When men were transferred to existing jobs within the concern this quite often involved a shift to lower paid work. In the Swedish rolling mill this was true of the men who did not move to the new mill. But in many cases this problem was solved by guaranteeing the worker his previous levels of earnings, at least for a period. Two quite distinct philosophies can be discerned in the use of such guarantees. The oil refinery declared its belief "that employees should be paid on the basis of work performed. Therefore no attempt was made during the modernisation programme to maintain the former wage rate of the displaced employee reassigned to lower grade jobs". In this enterprise it was estimated that two thirds of the men were eventually earning the same as before, while the rest were evenly divided between increases and decreases. In contrast, the German rolling mill which encountered difficulties with its job evaluation programme eventually guaranteed earnings for transferees to the new mill. To deal with problems of production bonuses, extra pay for shift work, overtime and Sunday work, lump sum compensation was paid and production bonuses were frozen at the level the worker had attained in his previous job. After a year and half of normal working these fixed bonuses were still being paid, and had in fact been increased.

Guarantees of this kind really represented a guarantee of a minimum equal to previous earnings and were designed to reduce workers' opposition to change. How effective they are in dealing with earnings discontents depends on the frame of reference which the worker uses to judge his pay. Some studies have suggested that he may compare not with what he earned in the past, but with what he would have been earning had there been no change. The men who transferred to the new Swedish shipyard, for instance, were not satisfied with their guarantee when they discovered that rates in the old yard had risen(1).

General guarantees to manual workers of no loss of pay on transfer to different departments of the organisation featured in the French nationalised gas industry, the Austrian foundry and the distribution of liquified gas. Problems which arise when geographical moves are involved in these transfers and when there is a wide dispersion of wage levels in different parts of the country are illustrated by the experience of this latter enterprise. For example when some workers, who came originally from Brittany but who were working in Normandy, heard that the firm was opening a centre in Brittany they all applied for transfers. But this request was refused because to have taken their guaranteed original salary with them would have raised the problem of aligning other wages in the centre. A statutory guarantee of no loss of pay was available in the British cotton firm, because changes there took place under the umbrella of the Cotton Industry Reorganisation Act.

It was even more customary to guarantee no loss of pay to white collar workers. An interesting contrast between the treatment of the two groups, white and blue collar, was provided in the original redundancy agreement concluded between management and unions in connection with the railway workshop redundancy in Britain. The workshop, or manual grades, were guaranteed their standard time work (i.e. basic) rate of pay for five years on transfer to a lower grade post but for salaried staff the old rate could be retained indefinitely provided the man did not refuse a reasonable offer of a job in his own grade. Subsequent relaxation allowed even the manual group to retain their rate indefinitely(2). Most of the civil service type employments in the case-studies offered guarantees of no reduction in earnings and so did the Canadian insurance company. In that case it should be noted, however, the salary levels were frozen, and employees on incremental scales did not automatically receive their old increments.

It was noted above that one enterprise, the German rolling mill, had paid a lump sum compensation to transferred workers in respect of loss of overtime and Sunday work. There was one example of a firm paying lump sum compensation generally to men remaining with the firm "who had suffered financially, based on age, length of service and reduction of earnings". This was the British steel company.

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(1) Similar evidence is found in a British study. W.H. Scott, A.H. Halsey, J.A. Banks, T. Lupton. 1960, op. cit. p.255.

(2) D. Wedderburn, 1966, op. cit., p.197 - 200.

Measures to guarantee earnings or to compensate emerged most often in those enterprises where the general conditions of employment, even for manual workers, had certain bureaucratic features. In the steel industry, for instance, there is a hierarchy of positions representing a promotion ladder for the operatives. In some of the other firms we have already noted guarantees or attempts at guarantees of no dismissals. These developments of permanency and commitment to an earnings level provide examples of the extension of the concept of "property in a job" which we referred to in Section 4.

## Geographical Mobility

The OECD case studies support the finding of Beaumont and Helfgott that "new technology is seldom the cause of plant relocation but is often the occasion for it"(1). There are a number of examples where existing sites proved inadequate for modernisation, like the Austrian foundry, the German engineering concern, the Swedish shipyard and warehouse. Administrative reorganisation frequently involved geographical shifts in operations. The Internal Revenue service eliminated jobs in outlying centres and created them in the centralised Atlanta service centre. Changes in the organisation of the Norwegian customs service and the Swedish railways involved similar shifts. This is one type of geographical mobility, where the centre of the firm's or organisation's activities moved. Another type was where the individual worker had to accept a geographical move in order to avail himself of the opportunities for transfer to other jobs in the same or other companies.

The crucial question from the point of view of both the individual affected and the manpower planning problems involved was whether the shift meant a move of house. Where it did not, the main problem appeared to be whether or not the company would pay the cost of the extra travel involved. There was a great variety of practice on this point. The Austrian foundry, in line with its general policy of making the change as easy as possible for all its workers, stated that "the bus charges were entirely and without question borne by the enterprise". This too, was the policy of the Norwegian chemical concern. In both instances the travelling distance involved was about 40 km. In contrast, the engineering concern rejected the request from the workers to be reimbursed for extra travel, because it was stated that it was hoped eventually to induce them to move and live near the new plant. An interim bridging allowance was, however, granted. In the shipyard it was definitely stated that there was no question of meeting travelling expenses. The distance involved was only 8 km. The company was, however, able to use its influence to persuade the transport authority to supply buses between the centre of Gothenburg and the new site.

Even extra travelling was unpopular, and, for instance when the shipyard employees received a questionnaire asking about their attitude to transfer to the new site, 790 out of the 1700 employees who did not wish to transfer gave the longer journey as their reason. Less than half of the workers in the Austrian foundry agreed to transfer to the new site, and when a questionnaire was circulated to the workers in the German engineering concern 71 out of 470 workers were totally opposed to transfer. When we turn to the changes which involved moving house these were even more unpopular.

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(1) R. Beaumont and R. Helfgott, 1964, op. cit., p. 67.

Organisations varied in the extent to which they assumed any responsibility for assisting their workers with the problems of removal. The civil service organisations tended to have provision for meeting removal expenses. The Norwegian customs service also went so far as to negotiate for some compensation for loss incurred on the sale of houses, when employees had to move from extremely isolated frontier districts. Swedish state railways agreed to cover the extra cost of maintaining two homes for a year while the employee looked for new accommodation; in the next three months double rent was given and after that there were possibilities of extension of the allowances, after appeal, for up to a further 15 months. The Swedish telecommunication industry also reckoned to reimburse for the costs involved in maintaining houses in two different places.

One of the most comprehensive schemes for assisting the transfer of manual workers is that of the British coal industry. Lodging allowances are payable to the transferred miner while seeking new accommodation. There are grants towards legal and other expenses involved in the sale and purchase of a house, towards the incidental expense of a move, as well as removal expenses, and a settling in allowance for the first 4 weeks. Assistance is also available for monthly visits home while the miner is in lodgings. But most important of all perhaps, the National Coal Board takes active steps to make housing available.

There was relatively little direct provision of housing by the other organisations among the case studies. The distribution of liquified gas tried to redeploy its workers as near possible to their homes, but did reckon to find new housing for them when necessary. A number of the Swedish concerns tried to make arrangements for housing to be made available by the local authorities but the theme of the difficulties of doing this runs through all of the Swedish reports. In the United States the main obstacle on the housing front appeared to be the problem of loss on sale of existing owner-occupied dwellings.

Although precise figures are not available the reluctance of workers to move, even when the choice was between giving up their job and moving, appears universal. One British story of plant transfer perhaps sums up the reluctance most dramatically. The company concerned took elaborate measures to minimize the hardship of moving. It was prepared to cover removal expenses, any loss on house sale, a disturbance allowance and arranged with the receiving local authority for houses to be made available Despite all this, only 9 out of 840 manual workers actually moved(1). The general problems are summed up in the report of the Armour Automation Fund Committees' studies.

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(1) Alan Fox. The Milton Plan. Institute of Personnel Management, London 1965, P. 39 - 42.

> "Under the most favourable circumstances it is apparent that many people still prefer to take their chances in the local labour market rather than to move to a strange environment"(1).

Thus the limitation of viewing labour displacement problems only from the viewpoint of the enterprise become apparent. Although in all these cases of transfer, workers were not technically dismissed, the fact that substantial numbers were unwilling to move means that the local labour markets had to bear the impact of more workers seeking jobs. From the viewpoint of manpower planning two points emerge. Even where extensive efforts were made by the enterprise to find housing for workers and otherwise facilitate transfer, these efforts were frequently going to meet with little success and it was possible, by the judicious use of questionnaires among the workers, to establish this state of affairs at a relatively early stage. At the same time, because people could and did change their minds, any attempts to assess the manpower already available in the enterprise contained a particularly high degree of uncertainty in those situations where geographical mobility was involved.

## Shift-Working

A feature of the manpower adjustments in the case-studies which is particularly worthy of comment is that of shift-working. The prevalance of shift working appears to be increasing both in the United States and in the United Kingdom(2). If one of the factors accounting for this general trend is the pressure to spread the capital costs of highly expensive equipment, then we should expect to find shift working as a feature of studies of technical change where the inputs of capital are increased. The experience of the German paper-making concern shows clearly the factors at work. First, the new wide paper-making machine did represent a heavy investment and management was eager to spread the fixed charges over as large an output as possible. Second there were technical considerations which led to savings of running costs if the larger machines could be kept running continuously.

That shift working is also making an appearance as a condition of work of some white collar workers is illustrated by the automatic data processing case-studies. The British engineering company put its computer staff onto three shift working. The Swedish postal bank introduced two shift working originally as a temporary measure to help with the considerable work load during the conversion period. But in the end however the system was retained. In the Internal Revenue Service a beginning was made with two shift working but consideration was being given to the possibility of three shifts.

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(1) G. Shultz and A. Weber 1966, op. cit., p. 74.

(2) For the United States see Paul E. Mott, Floyd C. Mann, Quin McLoughlin and Donald P. Warwidk, Shift Work, University of Michigan Press, Ann Arbor 1965. For the United Kingdom a a survey by the Ministry of labour shows that the percentage of manual workers on shift work in manufacturing and certain other industries increased from 12 per cent to 18 per cent in the 10 years 1954 to 1964, Ministry of Labour Gazette, Vol.LXXIII, No.4, H.M.S.O., London, 1965.

Organising shift-work changes, some of which were quite considerable, did produce problems in a number of cases. The paper-making concern experienced particular difficulty because of the legal position which placed severe restrictions upon the regular use of Sunday work. These were overcome, but there was also considerable opposition among the workers. In this case it was not a question of introducing shift working but moving from a system of non-continuous to continuous shift working. A continuous four shift system was worked out based on a 4 week cycle, to give the operatives as many free Sundays as possible. The works council were won over to the proposals at an early stage and recommended their adoption to the workers as a whole. In the ensuing ballot they went through with only a narrow majority of 56 per cent. After two years experience of the new system, however, there was almost complete support for it.

The rubber-hose factory reported a rise in labour turnover which was attributed partly to the increased recruitment for the hose factory where three shift working was in operation. It was felt that this was a special problem because the company was operating in an area where shift working was not traditional. Certainly in so far as shift working did make for increased labour turnover it added to manpower forecasting difficulties. But it also intensified the problems of finding key and experienced workers when it was necessary to man extra shifts. These were not so serious where it was possible to move over slowly to full shift working. The German cold rolling mill went onto full shift working as soon as possible and this produced some strains. The hot rolling mill on the other hand was still only working one shift after half a year. It then proved possible to select key workers for the second and third shift from the already experienced men on the first shift. The question is raised in the report, however, as to whether, in view of the improved market conditions facing the company, the eventual move to full shift working was not a little too leisurely.

## Conclusions

The three rather special aspects of manpower adjustment which have been discussed in this section do not often figure centrally in the manpower planning process. Yet they can be seen to be crucial to any successful planning operation. The problems involved in working out wage and salary adjustments will be touched on again when the process of worker consultation is discussed in the next section. But both geographical mobility and the problem of shift working introduced a very large element of uncertainty into the calculations surrounding the manpower balance sheet.

## Section 9

## WORKERS' ATTITUDES TO CHANGE AND THE ROLE OF CONSULTATION

The OECD case-studies, and this report, have been prepared from the viewpoint of manpower planning as a tool of management. There has been no systematic investigation of the impact of change upon the workers involved, either in terms of its economic, social or psychological aspects. One or two of the case-studies do contain references to changes in the average level of earnings, to the effect of changes upon promotional opportunities and to the problems of integrating work groups. But there was no attempt to survey the attitudes of the workers affected, the apprehension they felt, or the advantages or disadvantages which they perceived the change to bring. This is not because the value of such material was not recognised, but because the scope of the study had to be limited.

Using only the very general information provided in the case-studies, one would conclude that all twenty-nine were, by and large, success stories, in that there was little reference to overt opposition from the workers to the proposed changes. To describe such a situation as a success story implies a certain expectation that "workers will resist change". Such is, indeed, a widely held view, which apart from anything else, seems to ignore the more or less continuous process of change which has occurred within industry over the last hundred years. This process has certainly not always and continuously provoked worker opposition. More important, however, the dangers of over-simplification and over-generalisation in this area are now beginning to be understood.

The report by Professor Touraine and his associates, in the present OECD series, underlines the complexity of the factors shaping workers' response to a changing industrial situation(1).

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(1) A. Touraine et al. 1965 op. cit

These authors stress that it may vary, among other things, according to the social situation of the worker and his view of it, according to the type of organisation in which he is working and to the type of collective action in which he is involved. They would agree, too, with Miss Woodward that the type of change involved is important. She argues that change from one type of production system to another, particularly into batch production, may produce many more strains and stresses than change within the same type of production system.

> "The studies certainly confirmed that the most recalcitrant problems of organisation and behaviour arise in firms moving into, rather than out of, the batch production area of technology"(1).

The data are not available to analyse any of the case studies in terms of such a complex framework. Nor have any of the writers on the subject of workers' attitudes to change defined satisfactory indices which could be used to measure the degree of acceptance or opposition. Objective worker behaviour, as reflected in the incidence of strikes, absenteeism, turnover rates, although one indicator, is of limited value because as Miss Woodward says, in some situations: "It soon became obvious that what appeared to be resistance to change was in reality a determination to get something out of the change"(2). Any change which affects work content or arrangements potentially re-opens the bargaining position between employer and employees, and it may be unrealistic to draw a line between opposition and the exploitation of the bargaining position.

## Indications of opposition to or acceptance of change

There was one example, only, in the OECD case-studies, of workers responding to an announcement of change by striking. This was in the United States oil refinery where the news of lay-offs came as a shock since the company had attempted to pursue a policy of no dismissals over a fairly long period of time. The strike lasted only a few days, and subsequently the union is reported to have co-operated with management, for instance, in its attempt to find alternative work for the displaced employees. In such a situation the strike might be seen as a formal registration of protest, somewhat akin to the much larger scale protest, of the railwaymen in the United Kingdom when the Workshop Plan was announced. Here, however, there was another, political element in the situation. The Railway workshops were a nationalised industry. The unions recognised that there was a rundown of railway work, but were pressing for the workshops to be allowed to engage in non-railway engineering work which at that time they were statutorily prevented from undertaking. A one-day strike was called, the first national railway stoppage since 1926. After the strike there were three months of representation at government level, and of pressure by local branches upon the national union leadership, but by Christmas 1962 the decision was, by and large, accepted(1).

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(1) J. Woodward 1965 op. cit. p. 209.

(2) J. Woodward 1965 op. cit. p. 194.

Political opposition to change was also mentioned as a feature of the trade union position in the rundown of the nationalised gas industry in France. There the unions argued that home produced coal should continue to be used rather than imported oil. But it did not apparently lead to overt action on the part of the workers. In the railway workshops the workers were aware of the long term structural decline of their industry. Struggle and opposition might be expected in such a situation because the changes are a permanent threat to the security and the status of those workers. Opposition, too, is to be expected where dismissals take place against a background of rising unemployment. There has certainly been a great deal of expressed and overt opposition to the 1966 redundancies in the British motor car industry. As we have seen, however, not only did relatively few of the OECD case-studies involve dismissals, but they were also occuring, for the most part, in good labour market situations. The two Norwegian chemical concerns which both involved some dismissals, recorded worker opposition and spoke of 'unrest'. But it is perhaps not without significance that in these two cases management appeared to hold back from telling the whole story of the projected changes at an early stage. In one it was said the plans were initially kept secret for fear that the workers would leave if they got to know what was being planned. The other case study where worker opposition was described was the German paper making concern. Here there was strong criticism of the proposal to introduce continuous shift working. It proved to be opposition without leadership, however, and gradually disappeared for the works council was won over to support the views of management.

There are many ways of expressing opposition to change without resort to strike action. We must include in this discussion the number of occasions on which workers refused to move when the plant had to be physically relocated(2). No collective action to express opposition was required in such a situation. Those who did not wish to move "voted with their feet." A number of workers did this in the case of the Austrian rolling-mill, where we also find a reference to the fact that it took considerably longer to get full production going than had been anticipated. Some of this difficulty was possibly due to the problems of integrating two different working groups, itself an aspect of opposition to change. Turnover is reported to have risen in two of the German case-studies. In one, the rolling mill, we find that the works council had originally opposed the plan to rebuild the plant. Moreover in the early stages of the rebuilding there had been a threat of major dismissals, which did not occur because the market situation improved, but which had an unsettling effect upon the labour force. We have already seen that this caused difficulties for those concerned with manpower planning(1). Unorganised individualistic opposition reflected in higher turnover rates or absenteeism can, therefore, be every bit as serious and disruptive, as organised action, such as strikes.

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(1) D. Wedderburn 1966 op. cit. p. 22/37

(2) See above section 8 p. 85/87

To what extent was there evidence in the case studies of the ready acceptance of change? Other studies have described situations where change is welcomed by the workers as evidence that the firm is in a strong economic position(2). This certainly appeared to be the approach of the unions in the rubber hose concern and in the cotton industry, even though in the latter there was contraction in the industry as a whole. Absenteeism is reported to have fallen in the new Swedish shipyard compared with the old, and in the paper-container factory. This suggests that workers' acceptance of change is likely to be more ready where they can see it as 'offensive' change undertaken to anticipate technical advance by competitors, or change in the market situation.

## Information and consultation with the workers

These examples raise another question, however. To what extent was the absence of opposition in these case-studies due to the care taken to inform and consult with the workers about what happening? The line between information, consultation and negotiation is a difficult one to draw in theory, although extremely important in practice in many countries. It has been said recently:

> "There is more general agreement about what is not the purpose of joint consultation than about what its purpose is. This is because in the past employers have emphasised that it should not be regarded as a form of participation by workers in management and trade unionists have sought to safeguard their bargaining function from any encroachment by consultative bodies. At the same time, the importance of the contribution which joint consultation can make to improving management's and workpeople's understanding of each other's point of view is widely recognised"(3).

But in some countries, like Germany, the same body, the works council, will be involved in both negotiation and consultation. By and large, where the division is important, matters for negotiation are those pertaining to the economic conditions of work, such as wages, hours, methods of payment etc. and matters concerning the detailed handling of dismissals. Matters for consultation are general matters relating to welfare or the economic condition of the enterprise.

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(1) See above section 4, p.51

(2) J. Woodward 1965 op. cit. p. 48 Although this observation was later qualified to a certain extent see p.194.

(3) Written Evidence of the Ministry of Labour Royal Commission on Trade Unions and Employers' Association H.M.S.O. London, 1965. p. 24

The line between consultation and information is largely a matter of the spirit in which the exchange is undertaken. In both situations workers have no "rights", but in the case of consultation there is the possibility that management may take account of, or attempt to meet, any objection raised by workers' representatives. We shall examine first the nature and extent of information and consultation in the case-studies, and after that the area of negotiations.

## The when, what and how of consultation

First, we shall consider the question of timing. It was generally stated that information was communicated to the workers "as soon as possible". But what was "as soon as possible" was clearly a matter of judgement. Examples where this meant as soon as the board of directors had taken the final decision are provided by the German rolling mill and engineering concern, the telephone exchanges in both Sweden and the United States, and the British steel and hose-pipe companies. It is interesting to note that the decision to install automatic data processing was communicated very early in all case-studies. This was before the implications, in terms of manpower and alteration in work content, had been worked out. Part of the explanation in these instances, however, was the need to involve the work force itself in the task of analysing the jobs already being done, as part of the process of planning the change-over.

It is a little surprising to find some delay in informing the workers of decisions in two of the Swedish studies. Since the 1946 agreement between the Swedish employers and trade unions on works' councils, there has been a rapid growth of these bodies in enterprises employing more than 50 workers. The terms of the national agreement refer to the need to provide the works council with continuing information about the economic position of the firm, lay a duty upon the employer to consult with the works council about curtailment of operations etc., and make it incumbent upon the employer to inform the works council of important changes in production or new methods of production or work(1). The two cases where there was delay, however, illustrate the general difficulty of determining when a decision is "taken" (2). Is it taken when the broad outline of the project is decided upon, or when the detail is worked out? The decision to build a new rolling mill was taken in the Swedish steelworks in May 1961. Manpower implications began to be worked out in April 1963, and it was at this point that the works council was informed. As for the shipyard, the company bought the site in 1957, and immediately rumours appeared in the public press. At this point the works council asked management about the rumours, but were told that they could not be confirmed. The Board took the decision to build the new shipyard in December 1957, but it was not until a year later, December 1958, that the decision was communicated to the workers. It should be added that in neither of these two cases did delay appear to affect relationships between workers and management.

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(1) F. Schmidt "The Law of Labour Relations in Sweden" Appendix 6 p.263 Harvard University Press, Cambridge, Mass. 1962.

(2) See above section 3 p. 39

It is sometimes argued that notice to workers of impending change can be too long. From the workers' point of view, it is said, long warning means a period of great anxiety. But this is not a very weighty consideration compared with the advantage of having a lot of time in which to look for a new job. From management's point of view, the argument is that workers may leave whom management does not wish to lose, and that a general rise in turnover can be embarassing. But the case-studies do not lend support to the view that such difficulties are insuperable. What they do suggest is that premature annoucement of plans which are subsequently changed should be avoided. One comment from the case of the distribution of liquified gas says:

"In 1959-60 in the factory at X we let it be known that there would be automation and decentralisation; they are still waiting to accept the change".

In the United States oil company where dismissals were spread over a six year period, one announced dismissal was postponed. This had the effect of making the workers believe that subsequent announcements were also likely to be delayed, and so it slowed down the rate at which the men made efforts to find alternative employment.

The question, what information was communicated is more difficult to answer, because we encounter general phrases such as "the workers were kept fully informed". In the early stages this appeared to involve a broad outline of the changes planned and the reasons in terms of market conditions, technical considerations etc., why such changes were necessary. Later it meant keeping the workers' representatives up to date with the progress of the project. We are told that in the shipyard, in the first two years after the building of the yard began, consultation referred "for the most part to transportation, canteens, changing rooms and similar amenities". In the case of the rubber hose concern, consultation covered the question of production standards. In the Swedish railways case study the union formulated proposals for improved activities for giving information to the workers concerned. In the Swedish paper container factory representatives of the employees sat on a committee, along with production and supervisory management, which dealt with the selection and training of workers, and it is reported that the nature of the selection tests to be used was discussed thoroughly with the trade union executive. The shipyard and the rubber hose plant are interesting examples of the problem of distinguishing consultation and negotiation, because clearly production standards impinge on the problems of the negotiation of new piece-rates and bonus systems. In the shipyard, as we saw, management considered it necessary that the trade unions should have a thorough knowledge of the proposed new work-study method, M.T.M., before it could negotiate an agreement. "The company first discussed its plans with the Metal Workers Union and the union branch in order to gain their support". It was then that it was decided that the union should receive a 6 week course in M.T.M. and later that the union executives together with the production manager and the head of the work study department should tour other enterprises where M.T.M. and job evaluation were in use. In this case, therefore, information and consultation were a prelude to negotiation.

In considering the methods by which information was given and through which consultation occurred we should distinguish between the contacts with the workers' official representatives, and attempts to inform the general body of employees. In most cases both were undertaken. In three of the countries from which the case studies were drawn, France, Germany, and Sweden, a widespread system of works' councils existed, developed either on the basis of statute or on the basis of agreement between employers and trade unions (1). Such bodies naturally formed a vehicle for information. It so happened that four of the six British case studies also related to enterprises where works councils, or their equivalent were in existence. Where these official management worker consultation bodies were missing, and sometimes in addition to them, information was given to official union representatives in those enterprises where the workers were organised. In such situations management may become very dependent upon the efficiency of the communication lines within the workers' organisations. There is at least one reference to a union making a very positive contribution by producing for its members, its own pamphlet about the change, and what it would mean. The Norwegian customs reorganisation, on the other hand, encountered difficulties in this respect. Hence the emphasis upon the development of other channels of communication. Occasionally this meant the formation of special committees, again with official union representation. We find examples in the shipyard and the rubber hose concern. More often these new channels took the form of special meetings with the workers, visits from senior management personnel to address groups of workers, the use of works newspapers or the starting up of special information bulletins. In so far as it is possible to generalise, it appears that the face to face methods were most successful, in particular where quite small groups of workers were involved and it was possible for them to ask questions freely.

Some types of change involved a survey among the workers. Questionnaires were issued in all cases which involved geographical relocation. They were used in order to get an estimate of how many workers would be prepared to move. A referendum on the new shift system was held in the paper-making firm and a narrow majority was found to be in favour of giving the new system a try. A considerable amount of imaginative effort often appears to have been devoted to find effective methods of communication at the grass roots level. Visits to new sites and plants were organised for workers, and in some cases their families. Films were shown and scale models provided.

A problem sometimes arises about the order in which information should be given to different groups, not only within, but also outside the organisation. Four interested parties can be distinguished: management groups outside the board or directorate which has been responsible for taking the decision; representatives of the workers; public authorities both local and national who may have responsabilities arising out of repercussion from the change, and finally the general public. The extent to which it was thought necessary to communicate with the last two groups depended very much upon the magnitude of the change involved, the extent to which the repercussion would be felt outside the organisation and the extent to which public departments, such as employment agencies could and would be involved.

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(1) For Sweden see above this section p. 93 For France and Germany see: A. Sturmthal Workers Councils Harvard University Press, Cambridge, Mass. 1964.

The handling of the railway workshops closures in the United Kingdom illustrated some of the advantages and problems of communication with these various groups. Some resentment was generated among the trade unions by the fact that the details of the plan for closures were communicated to the press on the same day as they were to the unions. In practice, because of leakages, there may be little difference between giving information to workers'representatives and making it generally public. There seems much to be said, however, in terms of the general maintenance of morale, for informing the members of the organisation, both workers and management, first. At the same time where the change is going to have impact upon the local labour market, full communication to public authorities at an early stage is essential. One of the notable advantages of the Railway Workshop plan, with its long period of notice of intention, was that it did enable local authorities and government departments to take steps at an early stage to encourage new industrial development in those areas which were dangerously dependent upon workshop employment (1).

## Negotiations with the workers.

Negotiations with workers'representatives took place through the existing machinery, whatever its form, for instance, the works'councils in Germany, or the trade union branch in Sweden. Thus there was variation from case-study to case-study according to the national variation in the system of collective bargaining. Moreover there were, as we have seen, examples of change taking place in organisations and firms where the employees were not members of trade unions and although machinery for consultation and information was established in such cases, no system of negotiation developed.

The range of issues on which negotiations took place were broadly similar whatever the organisation. First, attention was concentrated on pay issues, wages, piece rate adjustments, hours of work etc. In section 8 we discussed the nature and extent of the problems of manpower planning, which arise from the necessity to price new operations and to fit them into existing wage and salary structures. Early involvement of the workers'representatives in the working out of the detail of these adjustments appeared to pay dividends. Examples are the shipyard, the rubber hose concern ant the British steel company. As the latter case illustrated, such involvement does not necessarily mean that no fundamental disagreements arise, but acceptable solutions are found more quickly (1).

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(1) D. Wedderburn 1965 op. cit. p.37
P. Cook 1964 op. cit. p.79/84

When guarantees of no loss of earnings were offered, this was sometimes solely on management initiative and the guarantees appeared as part and parcel of the announcement of change. In other cases these guarantees were arrived at after negotiations. The way in which the bargaining situation is reopened in a change situation is well illustrated by the history of the negotiation of the weekly lump sum compensation in the paper-making concern and the fixed bonuses in the German rolling-mill (2). We have seen too that negotiations extended to attempts to obtain reimbursement of increased travelling costs (3).

There was only one example where the unions attempted to force management to adopt short time working or other work sharing devices as a solution to the problem of dismissals (4). Nor did there appear to be any negotiations about financial compensation for dismissed workers, such as occurred in the case of the British Railway workshops where some modifications were made in the management's original proposals for the redundancy Agreement. In so far as there were negotiations about dismissals they concentrated upon the question of who was to be dismissed. In Sweden information about the individual workers to be dismissed has to be communicated to the local representatives of the trade union concerned "not later than two weeks prior to dismissal or lay-off," under the terms of the Basic Agreement between the Swedish Trade Unions and Employers Association. In Norway management also supplied lists of names to the trade unions for their agreement. They found themselves under considerable pressure to justify departure from the principles of seniority. Alternative proposals for selection were made by the trade unions (5). It is not clear whether the seniority principle was accepted in the United-States oil refinery under a collective bargaining agreement or whether it was imposed unilaterally by management. But in the United States in general there is widespread use of the seniority principle in collective agreements covering both dismissals and rehirings. In the United Kingdom, on the other hand, there is no general policy on whether the question of who is to be selected is one for negotiation or not. Some trade unions have sought to be parties to negotiation; others have taken the view that they should not be involved in discussing the invidious question of which of their members should lose his job.

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(1) One of the negotiations in this company had to be referred to arbitration for settlement.

(2) See above section 8 p.83

(3) See above section 8 p.85

(4) For some discussion of the issues involved in these kinds of proposal see R.Beaumont and R.Helfgott 1964 op. cit. p.213/15 and above section 6 p.64

(5) See above section 6 p.66

## The contribution of worker consultation to the planning process

Manpower planning made it easier for management to keep the workers informed of the process of change. But it is important also to ask whether the process of consultation in turn contributed to the technical solution of manpower planning problems. Much more detail, than is available in the case studies, would be required to answer this question with authority. We would need to have an assessment of the contribution made by the consultation process to shaping the workers' general attitudes towards the change. On this point it can be said that the case studies confirm that the development of consultation procedures, when change is under way, is no substitute for a permanent and well established system of consultation built up over the years. We would also need to have some detailed description of points on which consultation took place, the proposals which were put forward by trade unions, an assessment of their relevance and of the extent to which, and for what reasons management did or did not take account of these proposals. Nonetheless we can say that the involvement of workers in such a constructive way was important in a number of the OECD studies like the shipyard, the British steel works, the rubber hose concern and the automatic data processing studies. These were all examples however where our second type of change, in the mixture of inputs of capital and labour, was most important, and where changes in the actual work content of the jobs were considerable. Changes in the scale of output, particularly contractions, may not lend themselves in the same way, to a constructive two way exchange between management and workers. This is not least because the conflict of interests involved will be stronger and more apparent.

Finally it is interesting to note that none of these case-studies provide any examples of negotiation or indeed, consultation on the question of the basic principles of the change itself. Even in the German rolling mill, which was subject to the legislation on co-determination in iron and steel of 1951, the decision was taken by the Board of Directors composed, apart from one neutral member, of equal numbers of representatives of the workers and the shareholders. The works council is described as the partners of the management committee, which contains the labour director, who like all members of the committee is appointed by the Board of Directors, but must have the approval of the majority of the labour members. The report says that an important part was played by the chairman of the works council "in the struggle against dismantling and the decision to rebuild the works", but it does not appear that in this struggle the workers were in any significantly different position from those in enterprises where no principle of co-determination applied.

## Conclusion

In conclusion it can be said that these case studies which describe enterprises which were attempting manpower planning, are also studies of enterprises and organisations which went to considerable pains to see that their employees were informed about the nature of, and the reasons for change. The methods used appear to have been successful in the main but their succes depended upon the previous existence of a well established system of joint consultation. In some cases there is evidence that the consultation process itself made a major contribution to the solution of the technical manpower planning problems, in particular where change involved much reorganisation of job content.

## Section 10

## CONCLUSIONS - LESSONS FOR THE FUTURE

This study has attempted to survey, in the broadest possible terms, the methods, the organisational forms and the problems involved in manpower planning for change at the enterprise level. Inevitably certain issues will have been inadequately discussed, but this is the necessary price for viewing planning as a whole. Despite the omissions and the sometimes superficial treatment of certain questions, it is possible to draw broad conclusions which should prove helpful for those, be they management, employees, or representatives of government, who will find themselves faced with the problems of change. This we shall now attempt.

### How representative are the OECD case-studies?

We emphasised at the beginning of this report that the case-studies assembled by OECD, could not be viewed as a random sample of enterprises and organisations. They were deliberately chosen as examples of bodies which had made some attempt at manpower planning.This point needs to be reemphasised here. As far as manpower planning is concerned the case-studies almost certainly represent above average standards in all the eight countries. Most organisations lag a long way behind. The gap between the best and the average may be wider in some countries than in others. In countries like Sweden and Germany, legislation or widespread agreement between employers and trade unions govern such matters as notice of dismissals or impending change. This in itself is likely to introduce a measure of uniformity of practice. In others, like the United States there is no legislation, and the power of the trade unions which have been successful in incorporating some of these measures in collective bargaining agreements, varies very considerably from sector to sector of the economy. So does management practice.

It is possible to say that the OECD case studies are representative in one sense. They do represent the wide diversity of types of change situation in which organisations can become involved. The net was cast wider than so-called "pure" technological change, and justificably so. For we have found that the type of information required for manpower planning, the manpower consequences and the techniques available for handling the consequences are similar, whether the change consists in a general reorganisation of the tasks in an administrative body, the introduction of semi-automatic techniques in a steel plant or a change in the type and range of products of the enterprise. They are also basically the same whether it is white collar or blue collar workers who will be involved; and whether it is a privately or publicly owned concern.

## Does manpower planning vary according to the type of change?

Does this conclusion, that there are great similarities in the manpower problems of different types of change, invalidate the attempt made in Section 2 to produce a typology of change? The answer is no. As we stressed in that section the real world produces few examples of a pure type of change, but different types of problem assume different orders of magnitude according to the predominant characteristics of the type of change involved. For instance, where the change mainly involves the expansion or contraction of output, the manpower problems will be centred on the problems of reducing or expanding the labour force. Where the change is change of the second type, in the inputs of labour and capital, then the manpower problem will centre upon problems of the transfer of labour and retraining. The typology of change which we have suggested is crude. But with the accumulation of further knowledge it can be refined. An early task for manpower planning must be to identify the main features of change, using this sort of typology, and after that to define the chief manpower problems associated with those features.

Throughout the study we have also been aware of the importance of identifying the general background to the change and the nature of the stimulus which initiated change. The market situation is specially important because of its influence upon the timing of the operations. We have seen that where change is taking place because the market is contracting the enterprise is likely to be under such pressure to contract its labour force, that it has little choice about how it does this(1). The contracting market is also likely to influence the attitudes of the workers who may feel particularly threatened in such a situation. Here worker opposition, organised or unorganised is particularly likely to occur.(2)

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(1) See above section 5 p.56

(2) See above section p.91

On the other hand change introduced to keep ahead of competitors can often be carried out with more flexibility and a greater chance of cooperation from workers.It has proved difficult to define precisely the concepts of 'offensive' and 'defensive' change but the qualitative differences in the two situations is very important for the type of manpower planning operation involved.

## Differences between countries

It has been very interesting to note how similar have been the range of problems encountered in all eight of the countries. To some extent this might be attributed to a certain concentration upon case-studies from the same industries, particularly the steel industry, and automatic data processing in clerical organisations. But in the field of redundancy practices, at least, another study in this series has suggested that the differences of practice between the same industry in different countries, are more closely linked to historical and institutional features of the country than to the economic and technological features of the industry(1).

Redundancy practices, however, are only one aspect of manpower planning and an aspect which is particularly likely to be influenced by the tradition and form of employer-worker relationships. It was in the field of worker consultation and negotiations that the widest differences between countries were found in this study too, but even in this area they were perhaps not as marked as might have been expected(2).

## The importance of the general level of employment

One of the great similarities between six out of the eight countries studied was the high level of employment at the time of the case-studies and the fact that the labour market was generally characterised by labour shortage. There were local exceptions but the general experience helped to account for the difficulties in recruiting suitable labour and the emphasis placed in so many of the case-studies upon training and retraining within the enterprise. Examining the material in the case-studies serves to underline once again the vital importance of governments assuming responsibility for the maintenance of a high and stable level of employment. Even with this kind of economic background, change will result in some individual hardship. Without it, however, the task becomes too large for the enterprise to tackle effectively on its own, however well developed and effective its manpower planning techniques may be.

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(1) A. D. Smith 1966 op. cit. p. 115

(2) See above section 9

## The techniques of manpower planning - a continouous process

Even though these OECD case studies represented above average practice the type of manpower planning used was still fairly elementary. The adjective 'elementary' is used not in order to contrast this type of planning with the use of elaborate econometric manpower forecasting. It is used rather as a comment upon the extent to which consequential manpower adjustments were foreseen and planned for in these organisations. The basic approach was the construction of a manpower balance sheet. Manpower requirements before the change were compared with the calculated manpower requirements after the change and a net surplus or deficit of labour arrived at. The matters which received least attention, and which caused some of the bigger problems developed at a later stage and were concerned with obtaining labour with the necessary skills, fitting consequential wage and salary adjustments into existing structures and handling changes in the conditions of work such as the introduction of, or change in, shift working arrangements and in the physical location of the plant.

At the same time we found that manpower planning nearly always played a secondary role, and that priority was given to technical planning. Certain problems, like the recruitment of the right quantity and quality of labour were under-estimated. Perhaps, most important, the case studies did not provide any examples where manpower planning considerations caused any major modification of the original technical decisions. It is quite realistic to think of a situation where the identification of say, a current shortage of labour with a particular skill could cause an amendment of the technical plans in order to reduce the demand for that particular type of labour. Another illustration of this feed back effect would be a situation where the existence of temporary unemployment in the locality would affect the timing or order in which certain changes were to be made, so that the enterprise was able to avoid dismissing workers until the local employment situation had improved. Potentially such feed-back could prove to be a major advantage of the manpower planning exercise. In any case manpower planning should be embarked upon as soon as change of any kind is contemplated.

With our present knowledge and experience of manpower planning, there are many possible models or schemes which could be proposed for the manpower planning mechanism to follow(1).

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(1) See T. Lupton A Model for Diagnosis and Decision-making in situations of technical change and S. Barkin A systems approach to adjustments to technical change.
Both these papers were read at an International Conference on Methods of Adjustment of Workers to Technical Change at the Plant Level organised by OECD Amsterdam, November, 1966.

The following summary has no virtue other than that it arises out of an examination of the successes and failures in the situations studied in this report. The tasks for manpower planning should then be defined to include:-

(1) An inventory of the use of existing manpower in terms both of quantity and quality.

(2) An examination of the main characteristics of the organisation in terms of objectives, type of technology, administrative structure, social characteristics of the work force etc.

(3) An examination of the environment of the organisation in terms of its market situation, the stimulus for change, the social and economic characteristics of the labour market.

(4) Identification of the main characteristics of the changes proposed, in terms of scale of output, technology, organisational and administrative aspects.

(5) Assessment of the labour requirements quantitative and qualitative after the change and the implication of this in terms of the required adjustments in the size of the labour force and in its skill profile.

(6) A matching of this assessment with available resources; feed back and re-examination of the feasibility of the changes proposed.

(7) A review of the techniques available to arrive at the desired objective and the selection of the appropriate techniques.

(8) Consultation with workers' representatives and re-examination of proposed actions in the light of their views.

(9) Consultation with the appropriate labour market and other public authorities.

It must be stressed, however, that these steps, although listed in a roughly chronological order, cannot always be followed in this way. Consultation with the workers may take place at a much earlier stage depending on the firmness with which the main outlines of the change are decided upon. Similarly consultation with public authorities may also need to take place at a very early stage. As important, many of these steps will be constantly retrod. For the planning process must be a continuous one. We saw how external factors, such as the labour market conditions, or internal factors such as the size and composition of the existing labour force, could themselves alter during the course of a particular technical or administrative change. These alterations required consequential adjustments in the original plan. One study in the United States has admirably summarised both the dangers of over great emphasis upon technological requirements and the dangers of inflexibility in planning thus:-

"Several traps await the planner of technological change - traps that are rarely side-stepped except by the thoroughly initiated. The first is a pre-occupation with the technical facet of the change... The second consists of attempting to devise at the outset a plan for the total program of change rather than adopting a plan phased with checkpoints for periodically evaluating progress and setting new objectives"(1).

Ideally, however, manpower planning will be even more continuous. This report has concentrated upon planning for change, as though in most cases change was a unique and identifiable event. We saw that the minority of organisations, where change was seen as a continuing process, had certain advantages in dealing with manpower problems. In fact, however every enterprise is faced with change in some degree most of the time whether it recognises it or not.But many managements are ill-equipped to deal with it. It is a matter for some surprise, how few enterprises are knowledgeable about the way in which their existing labour force is utilised. Some of the tasks we have listed, such as the first three, should be undertaken by the management of any organisation.

When a major change is contemplated it is essential to embark upon the other steps in the sequence at as early a stage as possible. The time factor is crucial in determining the range of techniques available to management. Attrition takes time, so does training and retraining. The OECD case-studies also suggest that where new, advanced, technology is being introduced, it takes a long time to assess manpower requirements.

## The organisational form of manpower planning

The case-studies did not provide enough information about general management structure for it to be possible to draw any conclusions about the most suitable form for manpower planning to take. There are three observations which may be made, however. First there are real dangers in viewing manpower planning as yet another "specialisation" in a management structure where specialisations fashionably proliferate. It is an essential part of the total planning operation of the enterprise. Secondly, and this may conflict with the first, it is important that the organisational form should be such as to give manpower planning status within the organisation. Thirdly, and this is linked with the second point, it must be a form which enables the two-way flow of information between technical and personnel sections which enables the repercussions of the proposed change to be considered at all levels of the organisation, (levels both in terms of hierarchy and in terms of geographically distinct units of the organisation).

## Worker consultation as a part of manpower planning

It must be clear from Section 9 that worker consultation and negotiation has a significance at the enterprise level which extends beyond manpower planning. Indeed, because of this, it was in this area that we found existing institutions and practices, accounting for some of the variations in experience between countries. It is impossible to alter, overnight, the tradition of industrial relations in an enterprise. Nor is it possible, through negotiations and consultation alone, to change the attitudes of the workers concerned to change. This is particularly true if their experience dictates otherwise.

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(1) F.C. Mann and L.R. Hoffman, 1960 op. cit. p. 193

We found that, in so far as manpower planning did enable management to formulate more precisely and at an earlier stage what the consequences of change would be, it also made consultation with workers representatives easier. We found, too, that the recognition of the importance of manpower planning was accompanied by a willingness to take steps to reduce the hardship suffered as a result of change. Periods of notice of dismissal tended to be longer than average, steps were taken to ease the transition of dismissed workers to the labour market, measures were taken to retrain workers for new jobs and so on. In any change situation, however, some individuals are likely to be disadvantaged. Where average earnings for a group of workers are said not to have fallen, for instance, this is often compounded of a decline for some workers and an increase for others(1). Where dismissed workers find new jobs, on average very quickly, there are likely to be some, possibly the older men in failing health, who do not(2). The individual suffering which is caused in this way must not be forgotten, even though to minimise it may require not only action on the part of the firm, but also on the part of the government.

Equally, however, some form of manpower planning is possible without worker consultation and negotiation. The degree of worker participation in other words depends upon the bargaining strength and the philosophies of the parties concerned. Association of the workers representatives with the decisions about change may be one way of winning support from the workers. But it may also serve to isolate the leadership from the rank-and-file of the workers. Some unions in some countries may demand the right of co-decision:

"The company should undertake to elaborate long-term plans on manpower needs; the workers should have the right to co-decision in the establishment of these plans"(3).

But this is raising an issue which extends far beyond the issue of manpower planning for change, to the issue of workers participation in management decisions as a whole. The situation is a fluid one. The range of issues on which, not only consultation but also negotiation take place is gradually being extended in most countries, but as Sturmthal says:-

"For the time being, however, the difference between collective bargaining and the concept of worker participation in the management of the enterprise is still clearly felt...(4).

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(1) See D. Wedderburn 1965 op. cit. 100 - 101 and J. Dofny et al. 1966 op. cit. p. 177

(2) D. Wedderburn 1965 op. cit. p. 168 - 169

(3) G. Friedrichs 1965 op. cit. p. 14

(4) A. Sturmthal 1964 op. cit. p.

## Manpower planning at the enterprise and national level

This study has been concerned with manpower planning at the level of the enterprise. We have already stressed the importance of a background of full employment. But we must go further than this and stress the importance of viewing the enterprise as one unit linked with the total economic system. The link with which we are primarily concerned operates through the labour market. When the enterprise recruits or dismisses labour the repercussions extend beyond the boundaries of the enterprise.

Sometimes the enterprise itself sees its responsibilities extending beyond its own boundaries. It may feel it should help dismissed workers to find alternative jobs, or it may provide them with some financial assistance while they are seeking new employment. Is there any conflict between these enterprise activities and provision of such services at the national level by the government? Theoretically development at the enterprise and national level should not be competing but complementary. Services most often develop at the enterprise level when national services are inadequate or non-existent. It can be argued too, that even when national services exist, as in the case of government employment agencies, there is much to be said for the individual employer recognising responsibility for what happens to his own men, and therefore developing any contacts he may have to help them into new jobs. Developments of this kind at the enterprise level can in fact build on nationally provided minima. The possibility exists, however, that with some services the enterprise activities may be at the expense of raising the standards provided by the national service. This is particularly true of the employment services. The firm will find jobs most easily for its best workers leaving the second best for the public agency to handle. This perpetuates a vicious circle where other employers expect to get only second grade labour from the agency and so do not go to it with vacancies they have to fill. There is no substitute, therefore for concentration upon policies to ensure that these national minima are set as high as possible because there are likely to be very wide variations between different enterprises in what they do and how far they see their responsibilities extending (1).

The dangers of over concentration upon developments within the enterprise can also be seen if we examine more carefully the various techniques used at the enterprise level to minimise the displacement of labour. We commented upon the extent to which temporary labour was used in order to avoid dismissals of permanent staff. Unless this labour is genuinely on the fringe of the permanent labour market, the problem of unemployment is then simply transferred from one group of workers to another. Again we stressed the fact that only eight out of the twenty-nine case studies resulted in dismissals. But most of the changes were intended to be labour-saving, and another twelve actually showed a reduction in the labour force which was achieved through natural wastage, early retirement etc. Early retirement is a good illustration of how the problems of change may simply be transferred from the enterprise to elsewhere in the economy or society. There may, first, of all, be problems of adjustment to retirement for the workers concerned. In addition financial problems may be stored up for the future, when workers accept reduced, early, pensions, the value of which may be further eroded by inflation.

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(1) "Nationally" has been here equated with "government". Sweden provides an example where concensus has led to the application of certain standards, not through legislation, but by agreement between the national employers federation and the national trade unions.

Some commentators have implied that the manpower consequences of advancing mechanisation are even further removed from the enterprise than these examples would suggest. One aspect of this is commented upon by Wolfbein thus:-

"Perhaps more important still is the fact already mentioned that automatic systems frequently are not worked to full capacity at the time of installation and that output can therefore be increased with relatively little growth in the firm's work force"(1). Those who are disadvantaged may then be school leavers who find no jobs available for them when they enter the labour market for the first time.

Such considerations underline the need to integrate national and enterprise manpower planning. At the national level measures are required to assist workers to find jobs quickly, to protect them from financial hardships, to see that jobs are available in the right places or that workers willing to move can do so easily and without hardship, and finally to provide facilities for training. Above all it requires the pursuit of policies for full employment. These measures can then dovetail with measures taken by the individual enterprise.

## Criteria of success for handling manpower planning and change

The OECD case-studies were relatively free from overt expression of worker opposition to the change. But this is not necessarily a satisfactory criterion of success. Other criteria, the speed with which "normal" working was reached, the trend of labour turnover or absenteeism were not often referred to. From the viewpoint of the enterprise there is unlikely to be a single criterion of success. From the viewpoint of society the problem is even more complex. We have not questioned the necessity for any particular change at the enterprise level. But it could be that the total social costs of the change might outweigh the advantages to the enterprise.

Manpower planning is not a panacea, either at the society or the enterprise level. It can most usefully be seen as an important step in the direction of improving the diagnostic techniques available to management. Some authorities argue that it is through such improvements that the general efficiency of management will be raised(2). Within this diagnostic framework, however, there will remain a large area where the different value systems of management will still be influential. They will be important for instance in deciding, in the last analysis, whether or not the enterprise can "afford" not to dismiss workers. There will also remain a large area in which the relative bargaining strength of different interest groups will remain important in determining the final policy adopted.

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(1) S. Wolfbein in the Requirements of Automated jobs. op. cit. p. 67

(2) Joan Woodward The Study of Industrial Behaviour, Journal of the Royal Society of Arts No. 5127 Vol. 115 Feb.1967.

Change implies a new situation. A new situation will bring new problems. Continuous manpower planning is concerned with the early identification of these problems, and their solutions. Its real importance lies in the recognition it gives to the fact that labour is of equal if not greater importance than capital.

## Index of references to the O.E.C.D. Case Studies

Austria

Foundry: p.28, 30, 47, 48, 57, 58, 66, 79, 84, 85, 86, 91.

Canada

Insurance: p.27, 37, 39, 40, 57, 58, 84.

France

Gas Industry: p.30, 39, 50, 54, 57, 58, 73, 74, 75, 79, 84, 91.

Hosiery and knitwear: p.26, 28, 30, 37, 63, 67, 74, 79, 82.

Distribution of liquified Gas: p.27, 29, 30, 33, 35, 37, 41, 56, 57, 66, 70, 74, 75, 77, 78, 84, 86, 94.

Leak tightness inspectors: p.26, 49, 54, 58, 75, 76.

Germany

Paper making: p.28, 35, 37, 41, 49, 55, 59, 73, 76, 83, 87, 88, 91, 95, 97.

Pensions: p.27, 29, 30, 37, 57, 62, 72

Engineering:p.28, 30, 36, 41, 50, 58, 59, 76, 83, 85, 86, 93.

Rolling-Mill: p.26, 29, 36, 38, 40, 41, 42, 43, 49, 50, 51, 58, 59, 73, 77, 83, 84, 88, 91, 93, 97, 98.

Norway

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Warehouse: p.50, 72, 85.

Telecommunications: p.27, 33, 39, 42, 51, 56, 57, 62, 65, 77, 86, 93.

Railways: p.28, 48, 57, 85, 86, 94.

Postal Bank: p.56, 62, 66, 87.

**United Kingdom**

Coal: p.27, 29, 30, 39, 55, 62, 63, 66, 70, 86.

Steel: p.27, 28, 34, 37, 41, 48, 49, 58, 72, 75, 77, 82, 84, 93, 97, 98.

Cotton: p.28, 39, 49, 55, 63, 68, 70, 73, 76, 84, 92.

Rubber-hose: p.26, 27, 28, 34, 37, 41, 49, 55, 73, 76, 79, 88, 92, 93, 94, 95, 97, 98.

Dyestuffs: p.38, 48, 55, 67, 69, 70, 76, 79.

Computers in Engineering: p.27, 30, 87.

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# Appendix

## SUMMARIES OF THE CASE STUDIES
## CONTAINED IN THE VOLUME
## "TECHNICAL CHANGE AND MANPOWER PLANNING: CO-ORDINATION AT ENTERPRISE LEVEL"

6379

## I. AUSTRIA

### Case I. Integrating Two Foundries

In January 1959 this Austrian company, with an iron foundry at A, acquired another foundry at B, 40 km away. The two foundries then worked as one economic unit with two processing plants.

Two years later, when rationalisation of the whole enterprise was under consideration, the decision was taken to amalgamate and modernise the two foundries. This entailed a new building at A, the installation there of new automatic equipment, and the transfer of material, equipment and staff from B to A. The changeover was completed by September 1962.

There were about 340 employees, equally divided between the two old foundries. 100 of these, from plant B, would be superfluous in the new plant. Every individual at plant B was interviewed and it emerged that 40 wished to leave the company because of the change, and 65 preferred employment in one of the group's other plants in B. The remaining 75 were willing to undertake the daily journey to A by bus (an hour each way), and they were transferred to the new plant.

Employees had all been promised jobs of similar standing to those previously held.

## II. CANADA

### Case I. Introduction of Electronic Data Processing in a Canadian Insurance Company.

This study is of a large, privately owned, Canadian insurance company, handling ordinary and group life insurance only. In 1955, when it decided to investigate the possibilities of electronic data processing, business had been increasing at a constant rate for some years. The total number of employees at that time was 824 (230 male and 594 female); by the time the computer was introduced, three years later, it had become 957 (254 male and 703 female).

A Research Group of 16, which was appointed in 1955, included men from the various departments likely to be affected. It recommended that four areas of the company's work should be converted to a computer in stages. And it estimated that the new system would result in the elimination of 260 posts and the creation of 165 new ones, over a period of five years. By far the greatest impact would be in the junior clerical grades where normal wastage was high, and where employees were of the kind to transfer easily to new jobs.

Owing to the increase in work load, the accuracy of these forecasts cannot be ascertained (though the numbers required on actual data processing work were definitely under-estimated). Jobs were guaranteed to all displaced employees. By July 1963, 20 men and 120 women had been assigned to new jobs, and of these 7 men and 60 women had been put on data processing jobs. Salaries and wages were not allowed to fall below their existing level, even where the new job was in a lower grade.

The only problems that arose were among a few older employees in the higher grades who were not capable of taking on different work at an equivalent level elsewhere.

## III. FRANCE

### Case I. Concentration in a Nationalised Industry

This is a study of an industry - the gas industry of France which, with its 600 gasworks employing an average of 20 staff each, was nationalised in 1946.

At the time of nationalisation many of the works were out of date, and gas consumption was rising. A programme of modernisation was embarked upon immediately. This involved a large number of works closures and a change to new types of manufacturing processes.

Between 1946 and January 1964 the number of plants had been reduced from 600 to 56, of which only 17 were the old type of coal-distilling plant. In the same period the number of employees in the Production and Transport Department was reduced from 12,000 to 6,400 and 500 employees had been retrained and transferred to new jobs.

External factors such as new sources of supply, new techniques for processing gas, and unexpected changes in demand made long-term planning impossible. The Training Department, which was responsible for redeployment, had therefore to be adaptable. It relied not on rigid planning, but on certain guiding principles - for example, no dismissals; no loss of status on transfer; no obligation to accept a particular type of transfer; no break in continuity between re-training and re-employment. The trade unions played a significant part in the formulation of these principles.

Implementation was aided by the size of the organisation and the resources at its disposal, many of which are shared with the electricity industry.

## Case II. A Policy of Continuous Change with a Stable Staff.

The normal processes of change in a large French textile business are investigated in this study.

The firm specialises in hosiery and knitwear. It employs 2,100 workers in its factories which are situated in the traditional centre of the trade. In this industry the ability to keep up with rapid changes in fashions is one of the conditions of survival. Skilled labour is difficult to get, partly because of expansion of the industry itself and partly because of the demands of new industries.

Technical change in the firm is continuous. With each change the aim is to increase productivity by modernising equipment and methods, not by adding to the number of employees. Jobs are not particularly specialised, and it is normally possible to make a switch of products within the workshops and to maintain a stable staff. Staff are not willing to change workshops, nor do they welcome a change of supervision.

Planning depends on sales forecasts. Since 1960 the firm has had a computer to provide speedier and more accurate information in this field. Sales forecasts are made a year ahead; immediate production programmes for each workshop are settled once a month. The Board meets every month, when staff representatives are given information about product changes, sales and work prospects.

## Case III. Distribution of Liquified Gas: A Ten Year Programme of Decentralization and Mechanization.

The French company described in this study is a distributor of liquified gas, and belongs to an industrial group whose services, such as research and training, it is able to use.

In 1958 the firm had two factories for filling the gas bottles, each employing about 300 people. It also had a network of distributors spread over the country.

At this time the factories had reached their maximum output, but market research forecast an increase in sales. Changes were needed which would produce additional filling capacity, faster rotation of equipment and lower transport costs. The solution adopted was the decentralisation of bottle filling and sales points to 25 centres, and the modernisation of filling and transport techniques. The changes were to take place over a period of ten years.

With productivity four times higher than previously, redundancy was inevitable. Together the 25 centres employed about 350 staff, compared with the 600 at the old factories. The company did not dismiss staff. Its main concern was to redistribute employees to the new centres, and to develop the new skills required at the centres. To this end it concentrated on the long-term forecasting of its manpower requirements, and the progressive retraining of factory staff.

Wages and prospects in the company were good and there was little scope outside for jobs with comparable conditions for employees who did not wish to be transferred. Another difficulty arose from the difference in wage levels in different regions of France. The company was unable to transfer staff to five of the new centres because a decrease in salary would have been necessary to keep in line with the regional standards.

### Case IV. Staffing a New Factory in a New Industry.

In July 1961 the Atomic Energy Commission of France gave this company the job of installing the equipment and carrying out leak-tightness inspection in a new pilot plant. This involved recruiting and training a staff for a completely new industry, on work which was highly specialised and for which no recognised training or qualifications existed.

Responsibility for this programme was allotted to the selection and training department of the group to which the company belonged. It was agreed that a Training Centre should be ready by January 1962, so giving the department six months to define qualifications, arrange training programmes and carry out selection.

The planning was carried out on a group basis, with the department being helped by the company itself and by representatives of the Atomic Energy Centre. A precise job survey was made, and four grades were established. To begin with training was to be provided only for the lowest grade (whose members would have good career prospects in the three higher-grades) and the highest grade (who could advance to managerial posts).

Recruitment was conducted through a press campaign lasting several months, and selection tests were held simultaneously in five towns in the region. Out of 200 candidates, 15 were eventually selected to form the first batch of employees. By July 1961, 150 people had been selected and trained. After the training they sat for an examination, which had been specially designed and for which diplomas were awarded with Ministry of Labour approval.

This was a unique case. There was adequate time for proper preparation before the plant was due to start up. In addition, the department responsible was able to act autonomously without the constraints of an already existing organisation.

# IV. FEDERAL REPUBLIC OF GERMANY

## Case I. The Introduction of Four Shift Working in Paper Manufacture.

The factory in this study, the largest of four paper mills under the same ownership, is devoted exclusively to the manufacture of newsprint and is responsible for about 40 per cent of German production. It is situated in a mainly agricultural region, on the outskirts of a medieval county town.

By the late 1950's it was producing between 280 and 320 tons a day, with a male staff of 700 working on three shifts. The factory's competitive position was seriously threatened at this time. New types of machines had been developed in other countries since the war, and surplus supplies, particularly from Scandinavia, were depressing the world market. Modernisation was essential to keep down prices.

It was decided to replace two of the existing four machines by a modern machine, which for technical and economic reasons would require continuous operation. It was also decided that one of the two older remaining machines should also go over to continuous operation, while the other should keep to the three-shift system.

A planning committee was set up to work out these ideas in detail, to co-ordinate deliveries, and to deal with the manpower problems. It consisted of the business manager of the factory and the plant engineers directly responsible for production. Heads of sections and departments and works council shift foremen were consulted.

To meet the demands of a four-shift system, which also had to be extended to other parts of the plant supplying services to the two machines, some recruitment was necessary. Flexibility was achieved during and after construction by using fitters from the firm supplying the machine, and also by using the factory's own fitters to fill gaps in the production teams. Existing shift-teams were completely re-organised for the new system. Only younger and experienced workers were assigned to four-shift work on the machines.

Experience of the four-shift system soon overcame the initial opposition to it.

## Case II. Data Processing and Manpower Savings in Public Administration.

In April 1958 a computer was introduced in a large public administration in Germany to mechanise the work of the Pension Department which was responsible for establishing the entitlements and payments in respect of 84,000 retirement pensions.

The problem in the Department had been primarily one of manpower. With the staff available it had been impossible to keep pace with the constant revision of individual files made necessary by the frequent changes in the law. Labour was difficult to get, and the situation was aggravated by the introduction of the 45-hour week and by the age structure of the staff, many of whom were near to retirement.

The introduction of data processing forced a reorganisation of the Department which was long overdue. As a result of all the changes 107 posts were abolished in the Department by 1960, and a further 123 posts by 1961, representing roughly one fifth of the original employment level. At the same time a separate Computer Centre was established with a staff of about 70. The overall reduction in staff was in fact less than expected since the manpower requirements for running the Centre had been underestimated. Because of retirements no dismissals were necessary. Co-operation of the staff was facilitated by the improved prospects of promotion resulting from the increase in high grade jobs.

Manpower planning was based on statements by heads of sections on the work done by their subordinates. From these it was possible to estimate future time-saving, and to relate it to the numbers due to retire. Here the timing of the programme was important to ensure that the manpower reductions co-incided with maximum retirements.

## Case III. Personnel Planning a Major Need in Reorganisation.

This German firm, engaged in the metal processing industry and producing medium and heavy implements, had developed rapidly during the past 50 years, and by the early 1960's was employing several thousand persons, mainly men. Its main plant was near the centre of a large industrial town and could not be physically expanded. Smaller plants had been acquired on the outskirts of the city. Technical equipment was obsolete and the firm's economic position was on the decline. Reorganisation was made possible when a large part of the shares were taken over by a group which was able to provide the necessary capital. The new administration decided to rationalise and to construct a new plant (40 km away from the old main plant), where all the finishing processes would be concentrated.

About 470 employees were affected, and it was hoped that most of them would transfer to the new plant. This study was completed in August 1964, before the new plant was fully operating, but difficulties were then being experienced in getting existing staff to undertake the long journey or to move house. Moreover, additional staff were needed to meet the demands of increased production and high labour turnover. External measures included the recruitment of foreign workers and women. Attempts were also made to encourage existing employees to transfer by the introduction of advantageous conditions including monetary awards.

Normal management procedures, centring on the production department and planning office, were used for estimating labour requirements. But the quantity was emphasised at the expense of quality and insufficient attention was given to specific needs of each job. In a difficult labour market it became increasingly clear that personnel policy must be on a par with other major policy considerations if the plan for reorganisation was to be realised.

## Case IV. The Effects of External Forces in Staff Planning.

The rolling mills described in this study are part of a German foundry, situated in semi-agricultural country outside the Ruhr area. After the war the foundry was extensively dismantled and most of its markets disappeared with the partition of Germany. Reconstruction started in the fifties, and by the early sixties 11,000 workers and office staff were employed. But the crude and half-finished plates produced were too susceptible to market fluctuations and it was recognised that the range of rolling mill products must be extended.

The reorganisation programme included the building of a new cold strip rolling mill and, a year later, a new hot strip mill. Preliminary trials on the cold mill started in December 1962, and on the hot mill at the beginning of 1964. By the middle of 1964 there were over 800 employees in the two mills, most of them men.

The foundry had a strong personnel department, and the principles for manning the new rolling mills on a gradual basis were laid down in advance. These were, however, upset by a very high labour turnover in other parts of the foundry which needed about 1400 replacements, and by an unexpected change in the labour market with the expansion of neighbouring industries and the stopping of the flow of refugees. Improvisations were therefore necessary, including the reorganisation of work so that it could be done by less skilled operators, among them women.

## V. NORWAY

### Case I. Concentration of Production and Redundancy.

The company described in this study has its head office in Oslo and factories in different parts of Norway. Because of changes in import regulations its competitive position in the world market deteriorated. Part of the trouble was that its production units were too small, so the decision was taken to concentrate one particular production group.

Two factories were involved - A in the west and B in the east of the country. Machines and equipment were transferred from A to B, which was already manufacturing the product in question and did not require extra staff to meet the additional load. Factory A retained the manufacture of its other main product, but 19 workers and 6 staff were made redundant by the change.

Difficulties arose over the selection of workers to be discharged. For practical reasons, such as the need to retain certain specialised workers, it was not possible to apply strictly the principle of seniority, and there were strong objections from the union. Employees were told of the change a year ahead. The names of those affected were published six months before the date of discharge which was fixed to take place when the labour market would be favourable. In fact, all those discharged got other work immediately, although plans had been made for at least 15 weeks' financial aid to any who were unemployed.

### Case II. Concentration of Production and Transfer of Employees.

This study mainly concerns two factories (A and B) in Eastern Norway. They are in different localities, each with its own management and administrative services. Along with other factories in the company, they are subject to central control from the company's head office in Oslo. The products manufactured in factories A and B are of the same product group.

By the middle of the 1950's it became clear that new technical developments demanded large-scale production units for the manufacture of this particular product-group, and that rationalisation was necessary if the company was to exploit the technical advances. A rationalisation committee was appointed and as a result of its work the decision was taken to concentrate the manufacture of this product-group in factory A. An already existing committee on new products was then given the task, through a special working committee, of finding alternative production for factory B.

The transfer of production from B to A took place in two stages. The first, in 1959, was expected to cause 20 redundancies, but by this time new products were being manufactured in factory B and the surplus labour was absorbed. The second stage was carried out in March 1962 and involved a reduction in personnel of 77 at factory B. 50 men and 7 women were transferred, and 7 men and 1 woman were dismissed. Natural wastage accounted for the rest.

The transfer itself did not constitute a serious problem to the workers since the two factories were within half-an-hour's travelling time of each other. But some of the workers from factory B could not fill the immediate vacancies at A, partly because of health hazards in one department, and partly because of transport difficulties where three shifts were worked. This caused some reshuffling of jobs, and some resentment among factory A workers who were moved as a result.

## Case III. Rationalisation of the Norwegian Customs Service.

On July 1st 1957 the Norwegian Customs Service ceased to be part of a ministerial department and became an autonomous directorate. This was the beginning of a large-scale rationalisation prompted by public discontent with the delays, complicated formalities and expense of the existing service. Its primary objective was a faster and more efficient handling of goods.

The work of rationalisation has gone on continuously since 1957. During the first period (1957-1960) investigations were made to assess the quantity of work handled at each customs centre, and to estimate the manpower requirements of the centre in the light of the new developments. For the second period (1961-1970) an overall staffing plan was prepared. Rationalisation measures included the simplification of working methods used in customs centres, co-operation between Norwegian and Swedish customs stations, and the reorganisation of central and local administration, in particular the establishment of larger administrative units.

In July 1957 there were 125 customs stations and customs posts in all. By January 1959, 66 of these had been closed. In addition, 14 customs centres were to be abolished by 1970, and 10 more converted to customs stations. The number of employees fell from 2,600 in 1957 to 2,055 at the beginning of 1961, and was expected to be 1500 by the end of 1970.

The aim was that natural wastage should determine the rate of rationalisation, so that dismissals and transfers could be kept to a minimum. In fact, some transfers were necessary in cases where stations were closed, and between 40 and 50 temporary officials were dismissed.

Employees' organisations took part in negotiations on matters arising from rationalisation.

# VI. SWEDEN

## Case I. New Skills and Older Worker Problems of a Rolling Mill.

This study is about the transfer of production from an old to a new rolling mill, and the resulting manpower problems in a Swedish steel producing company.

The company has 3,000 employees and is the only major industrial enterprise in a town of 11,000 inhabitants. The old rolling mill had a capacity of 90 tons per shift and employed 69 workers; the new one a capacity of 350 tons per shift, with 45 workers. In the old plant much of the work was done by hand and was physically arduous. The new system is largely automatic, with complex electronic controls, calling for very different skills.

It was necessary to keep the old plant in production until the change-over was completed. For this reason, and because the average age of the employees there was high, the scope of recruitment was extended to all the rolling mills of the company. In fact only 20 workers from the old plant were transferred to the new, which created problems of redundancy when the old plant was closed.

Two notable features of the changeover were the new use of psychological tests for selection, and the introduction of formalised training, with particular emphasis on written job instruction.

## Case II. Adjustments to Control Planning and Production Control in a New Shipyard.

This firm of shipbuilders, operating from a five-berth yard and constructing ships up to 42,000 tons dead weight, launched an annual 140,000 tons gross at the end of the 1950's. It also manufactured marine diesels, stationary boilers, hatches, etc.,and undertook repairs. It employed over 7000 persons.

In 1957 the company decided to build a new shipyard in a new yard 8 kilometres from the old one, with the aim of constructing standard ships there. Manufacture of diesel engines, repairs, and the construction of specialised vessels would remain at the old yard. This decision was taken because international competition made it necessary to cut production costs because there had been a shift in demand towards ships over 42,000 tons d.w.

It was assumed that the 1500 employees needed for the new yard would be transferred from the old one, and that no external recruitment would be necessary. In fact, because of unexpected orders, more workers had to be retained at the old one than was planned, and about 400 people had to be recruited externally for the new yard. For the great majority transfers were on the basis of free choice. Geographical mobility proved to be a problem here. In a questionnaire sent to all employees, 790 gave the distance as a reason for not wishing to transfer.

The distinctive features of the new yard were its centralised production planning and control, and its methods analyses and allied piece-rate system. These entailed considerable preparation which was undertaken by two special project teams during the three years before the new yard opened. During this period particular attention was given to the training of specialists and supervisors in the new techniques. In preparation for the change officials of the trade union received a complete training in the new system of piece-rates and job evaluation, as did certain selected workers.

### Case III. Use of Redundant Employees in a New Paper Container Factory.

This company's activities are concentrated on forest products. Before the new factory was built the company operated a pulp-mill, a paper-container factory and a saw-blade factory at a town in the northern part of Sweden, as well as a saw-mill 10 kilometres away. It also possessed a large acreage of woodland. The number of its employees in this district was about 2,700. Nearly 1,000 of these were forestry workers of whom more than half were employed on an annual basis. As a result of rationalisation, 61 workers were redundant in the pulp mills in 1962, and 200-300 forestry workers.

During the 1950's, with the expansion of world production, the manufacture of pulp had become less profitable. It was therefore decided, in 1960, to build a new factory in the same town to manufacture a food container for which there was an expanding market in the frozen food industry. The factory started production in the second half of 1963. Some of its equipment was the first of its kind in Europe.

The original manpower estimates were for 81 workers, of whom 32 would be qualified. It was intended that recruitment should first be from the redundant pulp-mill and forestry workers, though it was recognised that some external labour would be needed to operate the more complicated machines. Eventually 34 workers were recruited from outside the company, and 14 of these had no previous experience. The housing problem, particularly among forestry workers who lived at a distance from the factory, was one of the reasons why it was not possible to select more company employees.

## Case IV. Time Lag in Human Adjustment to New Warehousing Methods

This is an account of personnel problems arising from the transfer of warehousing activities from seven old warehouses to a central modern one. The company concerned owns about 60 department stores which are scattered throughout Sweden. Its old warehouses, which had been acquired piece-meal as trade expanded, were spread around the southern part of Stockholm, and were generally antiquated and unsuitable for their purpose.

In order to achieve better service to the department stores, increased storage space and lower costs, the company decided to build a single new warehouse on a site about 20 kilometres south of Stockholm. Three features which distinguish the new from the old are:

1. The high degree of mechanisation in the movement of goods.
2. The system of locating goods through number codes operated by the head office data department.
3. The reorganisation of the supervisors' work which has become functionalised and more tied to routine.

The new warehouse needed 120 employees. The old had 140, but only 65 of these (including 6 out of the 7 supervisors) agreed to the transfer. The main objection to transfer was the long journey. Few were able or prepared to move house.

Those who did transfer did not adjust quickly to the new conditions. In the first year both labour turnover and absenteeism were high among them, as well as among the new employees.

## Case V. Flexibility and Control in Automation of Telephone Traffic.

The implications of automation for the telephone operators of the Swedish Telecommunications Administration are described in this report. The S.T.A. is a government trading enterprise responsible for operating the telecommunication services of the country. All telephonists are women.

Automation of telephone traffic, which offers great advantages both to the Administration and to the customers, was begun in Sweden in 1924. It did not present serious manpower problems until it was applied to long-distance traffic in the early 1950's. The change is being made in stages, depending on the availability of investment capital and labour for conversion, and jobs have therefore been eliminated gradually. The Administration has attempted to reduce the adverse effects of automation by long-term planning of personnel requirements.

Forecasts are made annually showing the estimated personnel requirements for each exchange during the next five-year period. In addition, detailed forecasts covering a two-year period are continuously revised. Employees are given detailed information on the estimated staffing position about two years before a reduction is scheduled, and are kept informed as changes take place. They are told who is likely to become redundant and what are the opportunities for transfer and retraining. Measures to minimise redundancy include delaying the automation of certain kinds of traffic, and keeping staff at the lowest possible level by such means as postponing holidays, relying on overtime, and holding up certain jobs which can wait until after the conversion.

Telephonists who become redundant are offered transfers to other jobs, which may be in a different district. If they cannot accept they are helped to find jobs with other employers.

The Board of Telecommunications issues written directives on personnel policy and these are continually revised to meet new developments. Central supervision is exercised chiefly through informal consultations with the regional management.

## Case VI. Administrative Re-organisation of the Swedish Railways.

This is a report of the planning stage in the administrative reorganisation of the Swedish State Railways which employs over 50,000 people. It covers a period of two years and concentrates on the planning of manpower changes at regional level.

Plans for reorganisation were based on studies of functions and relationships, and on a detailed analysis of the distribution of tasks undertaken by an organisation study group. Over 200 interviews were conducted, combined in some cases with job descriptions drawn up by the employees themselves. Employee organisations were invited to appoint contact representatives to the study groups.

The reorganisation involved the division of work into two distinct functions, each with its own regional organisation; an increase in the number of regions, but a decrease in the total number of administrative units through the elimination of one level; delegation of power and decentralisation; and the simplification or abolition of certain jobs. As a result the manpower requirements in the regional organisation would be reduced from about 1,700 salaried employees to about 1,200. In addition, practically every employee had a change in duties, and 400 had to move to different communities.

The setting up of the new regions was planned to take place from April to October 1964. In December 1962 steps were taken to control labour surpluses. Recruitment was stopped, as was promotion to positions in the highest grades. Efforts were also made to increase early retirements. Towards the end of 1963 preliminary selections were made for the new positions, after which the vacancies were thrown open to everybody. Nearly all employees were given from 3 to 9 months' notice of transfer.

No employees would be laid off. Those who were still redundant at the time of the reorganisation were given temporary jobs as substitutes or as reinforcements during the adjustment period.

## Case VII. Wholesale Switch to Electronic Data Booking in Sweden's Postal Bank.

On 1st April 1963, the postal bank in Sweden converted to electronic data bookkeeping in its savings account section. By early November the new system was working smoothly with a staff reduction of 30 per cent in the central bookkeeping department. The eventual reduction was expected to be from 370 persons, in the year before the conversion, to 170. Employees are mainly women.

The number of postal savings bank accounts was 4.8 million, on which 22 million transfers were made yearly at local post-offices. Daily statements of transactions are sent by 1,400 post-offices to the central administration which is responsible for accounting control of the statements, bookkeeping and accounting control of the individual accounts, calculation of interest, and clearance of totals. There is vigorous competition between the various savings institutions in Sweden and it is therefore essential to reduce operating costs. Labour for this type of work is difficult to get.

The decision to convert was made primarily because of backlogs of work in the central bookkeeping department at peak periods, and because the card punch equipment used was old and could not be replaced. In March 1960 a special working team was made responsible for planning all stages of the conversion, and at an early stage two women supervisors were given the job of liaison between the working team and the two departments mainly affected.

Because of the technical advantages all the accounts were to be converted simultaneously. This called for very careful preparation and timing, particularly in the areas of methods development and retraining of personnel, so that the bookkeeping work would be suspended for the shortest possible time at the changeover. Temporary increases in staff were necessary during the period before and immediately after the conversion. The subsequent and lasting reduction presented no real problem. It was achieved mainly through natural wastage and the transfer of younger mobile employees to other departments.

# VII. UNITED KINGDOM

## Case I. Planned Rundown of Coal Industry's Labour Force.

On 1st January, 1947 the coal industry of the United Kingdom nationalised. For many years, including the depression of the thirties and the war years, the industry had been suffering from the lack of capital investment and low output. The National Coal Board's task in the immediate post-war period was to produce coal at virtually any price, even though this meant the continued working of uneconomic pits.

By 1957 the situation was changing, largely because of greater efficiency in the use of coal and more extensive use of other fuels, particularly oil. It was essential that the efficiency of the industry be raised so that it could remain competitive. This involved extensive pit closures and concentrations, and for the first time the Board was faced with the need to run-down manpower deliberately. At the same time it had to meet its social obligations as an employer in a nationalised industry.

At the end of 1957 the Board employed some 810,000 people, about 705,000 of them at collieries; by the end of 1963 the number in the industry had been reduced to about 605,000 of whom just over 510,000 worked at collieries. During that period there had been roughly 300 pit closures, and the proportion of colliery output cut and loaded by machine had risen from 15 per cent to nearly 70 per cent. Productivy rose by one-third.

The reduction of manpower was carefully controlled so that the change was not too great at any time or in any place. Full advantage was taken of the high wastage rate (about 60,000 p.a.), and a system of recruitment priorities was established with priority given to juveniles, craftsmen, and ex-employees to whom there was an obligation. The vast majority of those affected by reorganisation were transferred to other pits without any break in employment, and they were assisted in these transfers by an extensive system of financial support. Most of the rest were placed in jobs before their redundancy pay ceased after six months.

## Case II. New Steel Making Techniques and Computerised Control.

The company to which this study relates has been established in the iron and steel producing area of South Yorkshire since 1823. In 1956 it was taken over by a large group of companies.

Since the second World War a number of major technological developments had been undertaken but further modernisation was needed in order to increase steel supplies and to extend the range of high grade steels. This was made financially possible with the take-over, and a Development Scheme was embarked upon. The scheme provided for the installation of a new steel making plant in place of the old, a primary rolling mill to replace the cogging mill, and a continuous strip mill for the manufacture of a new product. Four computers were introduced for production planning and control. Estimated annual steel production is now 850,000 ingot tons compared with 430,000 ingot tons previously.

In 1960, before the construction of the new plant, the total number of employees was about 4,700 (3,900 operatives and 800 staff). By the end of 1964, just before full production was achieved, the total was 6,463 (4,901 operatives and 1,562 staff).

The scheme also entailed considerable changes for the existing employees about 20 per cent of whom were either promoted or transferred to other work or another department. Intensive training schemes were undertaken, primarily for operators in the new production departments which required very different skills from the old.

## Case III. Modernisation and Shift Work in a Cotton Mill.

For several decades the British cotton textile industry has been contracting, and in 1959 the government intervened with the Cotton Industry Act. This aimed at eliminating excess capacity in the industry and at general re-equipment. It included provisions for grants to employers, and for compensation to employees who were put out of work by the reorganisation. As a result there has been a great increase in capital expenditure in the industry. New types of machines have been introduced and shift work has been extended. One of the processes to decline has been mule spinning.

This study describes the second stage of a ten year plan to modernise a Lancashire cotton mill. The mill is a subsidiary of a large public company and is situated in an industrial area where cotton is still the second largest employer of labour. It consists of two units on one site with a combined labour force of 657. The first part of the modernisation plan, affecting No: 1 Unit only, had been completed in 1960. The second part, affecting No: 2 Unit, was planned to start early in 1963, for completion a year later.

In No: 2 Unit mule spinning frames were to be reduced from 80 to 20, 44 ring spinning frames were to be installed, and half the cardroom was to be modernised. Three shifts and double-day shifts were to be introduced. One of the reasons for retaining 20 mule spinning frames was that most of the mule spinners were in high age groups and might find it difficult to change jobs.

No: 2 Unit employed just over 200 people (roughly 130 men and 80 women) and no significant change in number was expected.

The main change would be in type of work and system of hours. The only redundancy would be among employees who were unwilling or unsuitable for transfer, and these were expected to be few in number.

## Case IV. Integrating Two Hose Units.

This old-established Scottish firm manufactures a variety of rubber products, including hose. Its works are in the central area of a city of 468,000, where there is normally no difficulty in recruiting semi-skilled men. The total labour force at the time of the study was 1,807 (1482 men and 325 women).

In 1956 an American company took over control of the firm, and subsequently a £3,000,000 reorganisation plan was developed. The plan included the integration of two existing hose units in a new factory on the same site, the mechanisation of processes, and the extension of hose production. This change was necessary because of the demand for larger hose as well as for new types of hose, and because there was no space in the old units for the special plant required. The old hose units employed 98, compared with 158 in the new. 70 per cent of the employees are semi-skilled.

Production and manpower planning were interwoven. A special Project Group planned and co-ordinated the changeover, while a Labour Standards Committee worked for two years on job specifications, job evaluation and rates of pay. Once production had started in the new factory, a representative committee was established there to overcome teething troubles.

All the men in the old units were transferred to the new, and they formed the nucleus around which the labour force was increased. There was no difficulty in recruiting the additional men.

## Case V. Modernisation and Staff Reduction in a Dyestuffs Plant.

This study deals with the development and modernisation of a dyestuffs firm in the north of England. The firm, which is part of a large organisation with world-wide connections, is located in one of the older parts of a large industrial town where there is a concentration both of industry and population, and where for some years unemployment has been lower than the national average.

The factory site has grown from one acre in 1876 when the Company was founded, to 54 acres. During and after the second world war, development on the site had been haphazard because of shortages and restrictions, and it became clear that the factory was too outdated to compete in current trading conditions. The decision to modernise the site was taken by the parent organisation with the object of maintaining high quality on a reduced range of products, with lower production and maintenance costs.

Planning was started in 1957 and actual reconstruction in 1959. By 1964 the programme was nearing completion. Production had to be kept going whilst old buildings were being demolished and new ones erected.

Through the company's work study department and job evaluation scheme, and with the help of the group's experience on similar projects in other countries, it was possible to plan the labour force with some accuracy. The number employed decreased from 1,550 in 1959 to 1,149 in 1964, and a further decrease to 900 was forecast for 1965. Most of the reduction was achieved through normal wastage, but in 1959 100 workers were declared redundant because of a decision not to erect new plant for certain uneconomic products.

Early in the programme the company negotiated a site agreement with the unions, covering rates of pay, working conditions and settlement of disputes. Contractors and sub-contractors were also obliged to conform to this agreement.

### Case VI. Switch to Computer Accounting in Engineering

This is an account of a British engineering company which installed two computers to undertake accounting processes. Mechanisation of accounts was necessary because of the increasing complexity of the work and because of the difficulty of recruiting clerical staff.

The Division under discussion employed 1,200 manual production workers and 1,200 clerical staff. About 130 clerical staff were directly affected by the change in that they operated the old system; roughly half of them were National Cash Register Machine operators, and the rest clerks. At the time of installation 47 staff were required for the first computer team, though the numbers have risen since with increasing programmes.

All staff were given the opportunity to join the computer team. Most of the affected people who could not be used in the computer section were transferred to other work in the company, but 12 of the cash register operators were placed outside the company at their own request. Nobody was declared redundant.

Work was transferred to the computer gradually, section by section. At each stage in the programme the clerical staff directly affected were given advance notice of the change - usually about six months - and were given full information of its implications in a series of small section meetings.

## VIII. UNITED STATES

### Case I. Impact of Office Automation in a Government Service.

This is an account of the first stages of conversion to automatic data processing in the Atlanta region of the U.S. Internal Revenue Service. An outstanding aspect of the IRS approach was the special attention given by top levels of management to manpower as well as technical planning for the purpose of estimating the impact on individual employees and anticipating and arranging to meet problems of manpower adjustment.

The changeover involved considerable changes in organisation and flow of work. Because of increased work load the overall number of jobs in the region was to be increased. The two main problems were the change in location of work, and the change in types of occupation. Much of the work was shifted from district offices to the regional centre. In addition, there was a large increase in machine operating and other specialised jobs connected with A. D. P., at the expense of routine clerical work.

It was estimated that of the 1,000 jobs directly affected, nearly 500 would eventually be eliminated. But over 900 new jobs would be created in the regional computer centre. During the first two years of the changeover the number of employees in affected units was reduced by 234 by natural wastage and by transfers to other units. No-one was laid off.

The policy of the IRS was to maintain job security for affected employees by avoiding layoffs, downgradings and compulsory relocation. Every effort was made to give employees in affected activities opportunity to transfer voluntarily to other jobs, either to those vacated normally in unaffected units or to new jobs opening in the regional centre. Among the procedures adopted were employee counselling and guidance about job opportunities, relaxation of Civil Service qualification standards, restriction on hiring permanent employees, use of temporary labour, and encouragement of early retirement. Great emphasis was laid on training and retraining.

The first stages of the conversion were not without difficulties. The need for a better understanding of factors affecting employee mobility was one of the points to emerge.

## Case II. Changed Manpower Needs in Conversion to Dial Telephone.

This report describes the methods used by three U.S. telephone companies in planning the manpower aspects of converting telephones from a manual to a dial system. The companies are part of a nationwide telephone system and follow similar procedures.

Details are given of conversions in five cities in the late 1950's and early 1960's. Other forms of telephone mechanisation were also introduced at the same time so that the manpower adjustments were greater than usual. The telephone operators affected by the decrease in workload were virtually all women.

The principles governing the manpower changes are set forth in company manuals, and the manager of the local office concerned is responsible for carrying them out. Estimates of future work loads are made several years ahead by company engineers and reviewed at forecasting conferences every few months, and job requirements for the new system are drawn up. Plans for placing the individual employees are made well in advance of the conversion.

Considerable importance is attached to the company-wide development of opportunities for transfer of those employees made redundant.

The manpower problems were in fact eased by the fairly high rate of turnover among the women operators, and the steady growth of telephone services which opened up new job opportunities.

## Case III. Halving the Work Force in a Petroleum Refinery.

In order to restore its competitive position in the industry, this U.S. Petroleum Refinery undertook a programme of technological change during the years 1957-63, resulting in a reduction of workers from 6,000 to 3,000.

The modernisation programme included the construction of larger refinery units, the extensive renovation of existing plant and operating methods, and the introduction of computer control of operations. In addition, management methods were streamlined.

The reduction of manpower was staggered over the six years, partly by careful timing of change, and partly by using redundant employees on the new construction work. The number of layoffs was kept to a minimum: older workers were given inducements to retire early, and no new workers were taken on during the three years preceding the programme. Long-service employees were protected by plant-wide seniority and by retraining, where necessary, for other work in the refinery; and displaced employees received financial aid from the company and were helped to find new jobs elsewhere.

Particular emphasis was given to the following factors:

1. All levels of management, down to first-line supervisors, were thoroughly prepared for the programme in advance, and were involved throughout in its realisation.
2. Communications to employees were planned and took place as early as possible. They included individual interviews with employees facing layoff.
3. From the beginning the union was kept informed of the programme.

## Publications of the Manpower and Social Affairs Directorate

### SOCIAL AFFAIRS DIVISION

### Employment of older workers

No. 1 Job Redesign, by Stephen Griew (August 1964) 86 p.

No. 2 Training Methods, by R. M. Belbin (March 1965) 72 p.

No. 3 Placement Techniques, by Irvin Sobel and Richard C. Wilcock (June 1966) 82 p.

No. 4 Promoting the Placement of Older Job Seekers: A Guide to Methods, by the OECD, Social Affairs Division (1967) 96 p.

### Industrial relations aspects of manpower policy

No. 1 Office Automation: Administrative and Human Problems, by W. H. Scott (July 1965) 104 p.

No. 2 Workers' Attitudes to Technical Change, by Alain Touraine and Associates (September 1965) 178 p.

Acceptance and Resistance: a resume by the Secretatiat of OECD (October 1965) 116 p.

No. 3 Redundancy Practices in Four Industries, by A. D. Smith (October 1966) 130 p.

No. 4 Technical Change and Manpower Planning: Co-ordination at Enterprise Level. Case Studies edited by Solomon Barkin (1967) 292 p.

No. 5 Enterprise Planning for Change: Co-ordination of Manpower and Technical Planning, by Dorothy Wedderburn (1967) - p.

Employment of special groups

No. 1 Women Workers: Working Hours and Services, by Viola Klein (July 1965) 100 p.

No. 2 Work or Support: An Economic and Social Analysis of Substitute Permanent Employment, by Bent Andersen (October 1966) 124 p.

No. 3 Counselling for Special Groups, by Gertrude Williams (1967)

Employment of Women in Spain, by Pierrette Sartin (1967)

Developing job opportunities

No. 1 Area Economic and Social Redevelopments: Guidelines for Programmes, by L. H. Klaassen (June 1965) 114 p.

No. 2 Methods of Selecting Industries for Depressed Areas: An Introduction to Feasibility Studies, by L. H. Klaassen (January 1967) 152 p.

No. 3 Compensatory Employment Programmes. An International Comparison of their Role in Economic Stabilization and Growth, by E. Jay Howenstine (1967)

No. 4 Reducing Seasonal Unemployment in the Construction Industry: Methods of Stabilising Construction Activity and Employee Income: by Jan Wittrock (1967)

Labour mobility

No. 1 Rural Manpower and Industrial Development, Adaptation and Training, by H. Krier (August 1961) 130 p.

No. 2 Adaptation and Training of Rural Workers for Industrial Work, by G. Barbichon (December 1962) 140 p.

No. 3 National Rural Manpower: Adjustment to Industry, by G. Beijer (August 1965) 116 p.

No. 4 The foreign Worker: Adaptation to Industrial Work and Urban Life, by R. Descloitres (1967) 174 p.

No. 5 Urban Worker Mobility, by Laurence C. Hunter and Graham L. Reid (1967)

Governmental Financial Aids to Geographical Mobility in OECD Countries, by the OECD Social Affairs Division (1967)

Changes in employment structure

The Growing Importance of the Service Sector in Member Countries, by Maurice Lengellé (December 1966) 188 p.